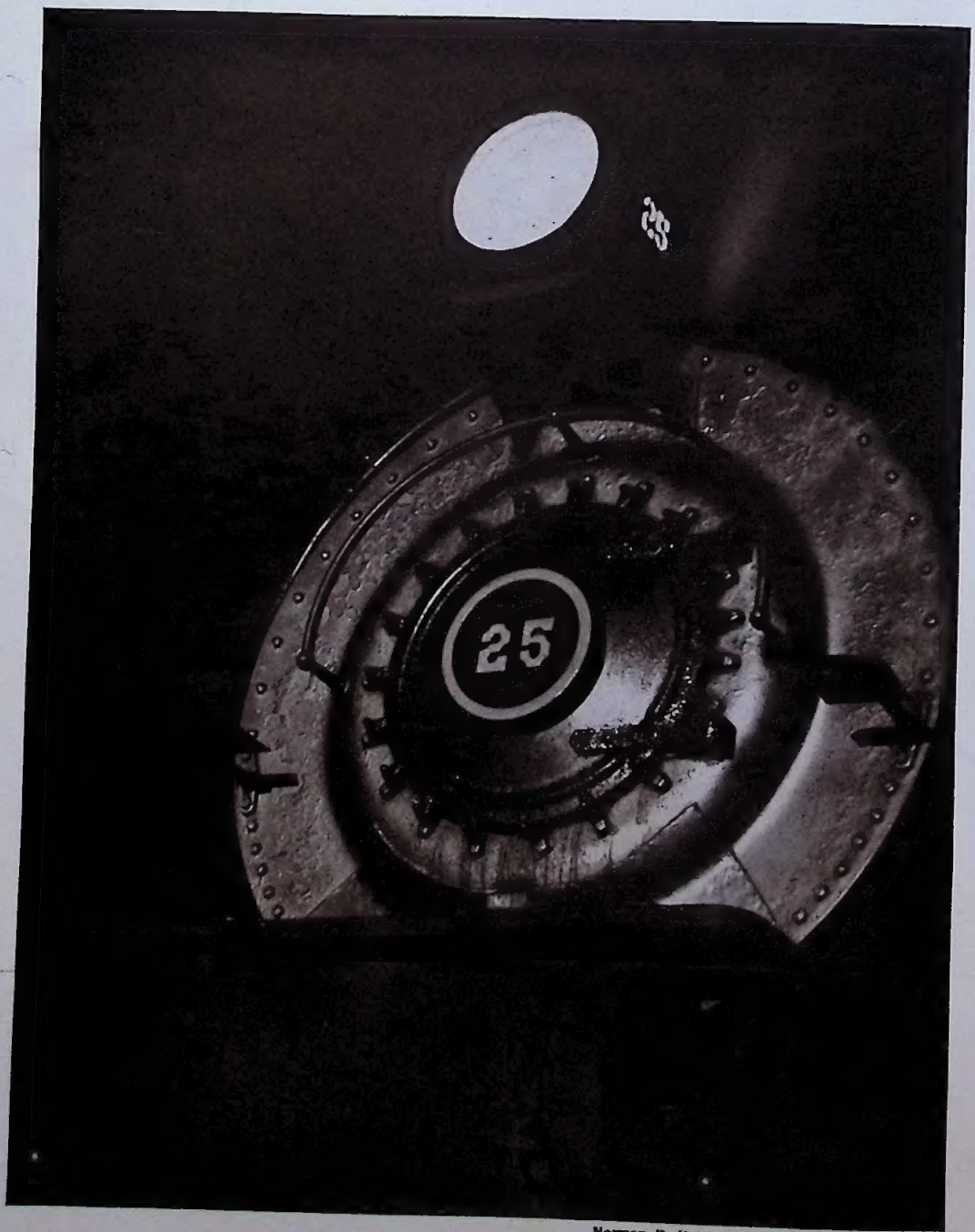
Trains

25¢

for NOVEMBER 1942

Cyclops, Class G-5.

With its one eye glowing and its face shining black and sweaty in the yard floodlights, locomotive 25 of the Long Island Railroad rests after its day of pulling suburban passenger trains. Norman Kohl took a picture of the hostler, gave him a print, and thus won cooperation for this and other excellent engine terminal views. Total exposure was 30 seconds, with headlight on dim during 10 of those seconds.



Norman E. Kohl, Locust Ave., Glen Head, N. Y.

Waybills

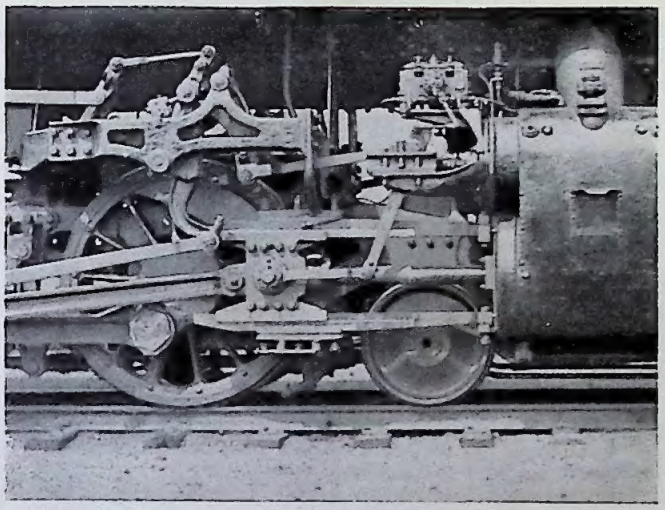
Edward Hungerford, author of railroad books, articles, and pageants such as "Railroads on Parade" at the New York Fair, joins TRAINS next month to write a two-page opener for each issue in which he will discuss the current railroad picture. To this assignment Hungerford brings a broad background of railroading and first-hand acquaintanceship or friendship with most railroad personalities.

"The Month" page in the rear of TRAINS is not exactly a news page. It makes no pretense of reporting in detail the locomotive and car purchases, the construction and abandonments. Such detail can be had in trade magazines, and would be out of place in a magazine circulated to the general public. But we are proud that "The Month" does a good job of reporting significant events in the railroad world and pointing out their significance.

Looking over the pages for the last year I find many a time when "The Month" was weeks or even months ahead in reporting railroad events later deemed important enough for notice by national magazines. TRAINS makes a point of not just reporting, but of understanding the railroad picture, and of passing that understanding on to its readers.

The annual index for Volume 2 of TRAINS, November 1941-October 1942, has been sent to all direct-mail subscribers. It is available free to any other reader who asks for it.

A. C. K.



Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

Vol. 3 November, 1942 No. 1

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Masthead photo shows valve motionwork of B&A No. 402. For full view of engine, see page 29.

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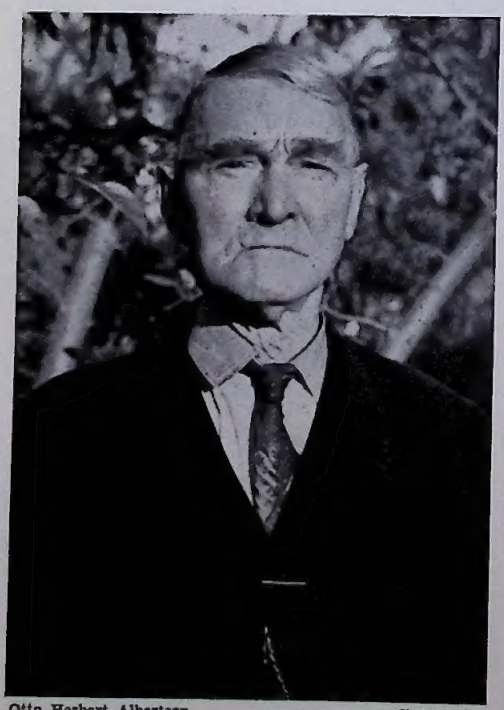
The first issue of TRAINS was for November, 1940. Many back copies available at 25 cents each. Vols. 1 and 2, bound in cloth, $4.00 each.

"Oh Hell" Albertson, Engineer

WARM Indiana skies carried a drawn-out whistle to a small boy hoeing the dark, furrowed earth. Otto Herbert Albertson forgot his chore and ran to the fence marking the railroad right of way that split his father's farm. He pressed against the wire as the engine rumbled through the fields; waved to the crew, watched longingly as the train clicked by. And resolved, for the thousandth time, to go railroading when he grew up.

Born January 3, 1870, Albertson, like many another boy, always held hope of a railroad job in the future. Several of his pals, when they were old enough, went to Indianapolis to find work on some rail line. It was mostly a matter of waiting and doing nothing, being johnny-on-the-spot when an opening turned up. Albertson couldn't afford this, and looked elsewhere.

★ A document of the typical railroad man in the days of American expansion.



Otto Herbert Albertson. Jim Morley.

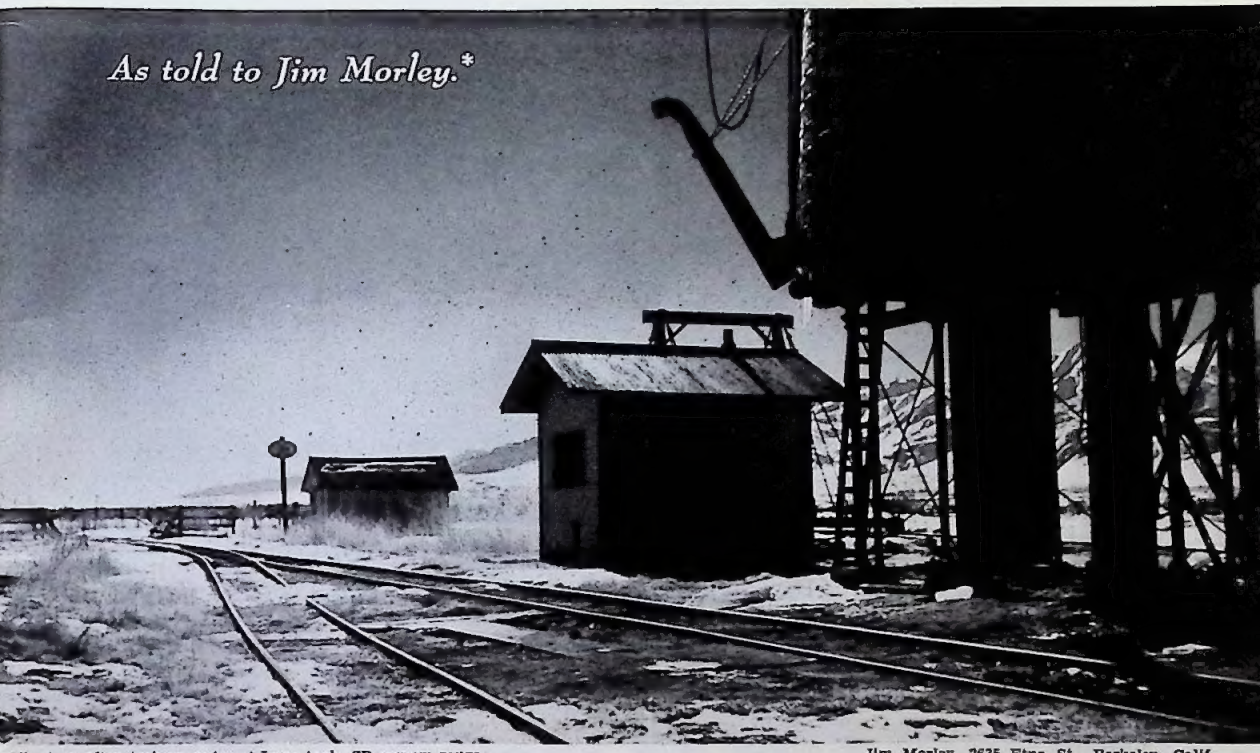
A cousin was general manager of a smelter out on the Colorado Midland. This g. m. often traveled with the general manager of the Midland in the latter's private car. The smelter man prevailed upon the railroad brass hat to give the farm boy a job, and it was done.

With a letter of introduction from the Midland's official, the young man approached the master mechanic at the Colorado City shops (Colorado City is now part of Colorado Springs), and was assigned to the "hobo" gang. Properly known as the material gang, its men loaded and unloaded supplies for the shops and the section crews out on the line. That was in 1890, when the Midland was scarcely three years old. Next came shop work—and the shop was plenty active, for the Colorado Midland built and repaired all its own cars, freight and passenger, at Colorado City. It was while he was thus employed that he was called to help clean up a bad smashup, the remains of a runaway. Even though he was not directly involved in it, he remembers the story vividly:

Grades were stiff at the east end of the line. Between Colorado City and Divide the railroad climbed much of the way at four per cent, and it was the custom to test the air (automatic) on all eastbound (downgrade) trains at Cascade, top of the longest four per cent pitch. It was after midnight when the marked train picked up a car here, and the air was tested. From what could be figured out afterward, the slip-up lay somewhere in those two operations, probably in a faulty air-hose coupling. Everything seemed all right, so, with about 16 cars, the engineer pulled out and dropped over the edge onto the four per cent.

He set his air at the usual allowance for the grade, and the brakeman wound up a few hand brakes. A couple of miles below Cascade, the company had foreseen runaways and built a spur steeply inclined up the hillside. The switch was always kept lined for the spur; if a train were under control, the engineer would whistle for the main and the

*As told to Jim Morley.**



Albertson often took on water at Laws tank, SP narrow-gauge.

Jim Morley, 2635 Etna St., Berkeley, Calif.

man stationed at the turnout would throw the points for Colorado Springs. This safety track was a treacherous-looking item, however, and all the boys had sworn they'd prefer taking their chances with a runaway to heading up the spur.

The train rambled down the hill, picking up speed. From the feel, the engineer realized he had air on only the first few cars. But he didn't trust the safety track, and thought he could bring his train under control farther along, so called for the main line. He also called for brakes, and the two brakemen started at the head end and worked back, cinching each wheel as tight as a club would take it.

When they arrived at the rear car they were somewhat startled to find the caboose missing—the conductor had uncoupled his light car from the rest of the train, easily slackened its speed with the hand brakes, and was drifting down after the runaway to see what would happen. The last five cars were full of ore from Cripple Creek; the brakies sat down on the last one and hoped.

The engineer tried to persuade his fireman to jump, but the latter replied that if the engineer stuck, he would. By this time the freight was traveling pretty fast for jumping, anyway. It raced down through the darkness, squealing around the bends.

The curve at the mouth of Tunnel No. 5 proved too much for the protesting flanges. The speeding engine hopped the rails and slipped along the embankment leading to the tunnel, smashing up that side of the machine. The wooden cab was completely

* This story is told as Mr. Albertson remembers it. Today he lives in a trim cabin at Redwood City, only a few steps from his sister's family. He is always behind in his reading of TRAINS, *Railroad Magazine*, and *Locomotive Engineers' Journal*. He keeps a scrapbook of any clippings that interest him. At the time he told this story he was concerned over the death of several SP trainmen in the freight break-in-two in the long Santa Susanna tunnel on the coast line. "Not such hot railroading somewhere," he figured. He often travels around the state visiting old friends, and can often be seen wearing the fireman's suit which he retained after working in the Long Beach fire department. When I wrote him about the interview, telling him what train I would arrive on, he replied: "I will be dressed in an old blue fire department uniform; another identification is that I have no teeth."—*J. M.*

Photo by T. H. Routh. Now in the Western Collection of the Denver Public Library.

Typical passenger train on the Colorado Midland.

This graceful cap-stacked Ten-Wheeler with its train was snapped on the Colorado Midland at Glenwood Springs, Colo., probably about 1900. The hard-pressed Midland, underdog competitor of the more favorably situated Rio Grande, was abandoned in 1918. At one time it was owned by the Santa Fe and was valuable in a traffic way, but not valuable enough to keep as a losing proposition, especially when much of the traffic would be turned over to Santa Fe anyway by the non-competitive Rio Grande. The Midland operated 337 miles of line.

sheared off on the tunnel structure as the locomotive lurched into the bore. The cars shattered and crushed their splintered remains into the tunnel entrance on top of the engine, forming an impassable jam. The last car stayed on the track, and the two brakemen survived.

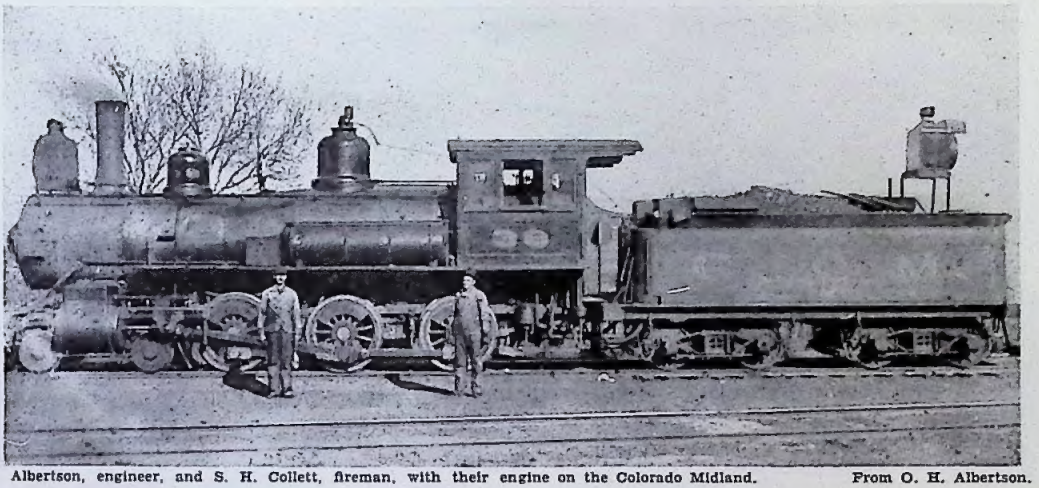
The wreck occured at 1 a.m. A bit later the conductor drew up in his "private car" and ran to a telegraph station to notify Colorado City of the disaster. The wrecking crew, including Albertson, was soon on the scene, digging for the engineer and fireman. The workers found the hoghead at 4 a.m., lying in a small clear space between the boiler and the side of the tunnel. Live steam from broken pipes had badly scalded him. That engineer lived until 9 o'clock the next morning.

The crew dug for 20 hours, stopping for an occasional sandwich and cup of coffee, to reach the deeply buried fireman's body. There were no other wrecks before or after on that particular stretch of track, and probably there is no photographic record of that wreck, as well as of many others, for the Midland wouldn't allow a photographer within picture-shooting distance of an accident.

Otto C. Perry, 74 S. Elati St., Denver, Colo.

Tunnel No. 5.

This is tunnel No. 5, scene of the runaway accident described by Albertson, as it looks today, with a train of ore empties on the Midland Terminal moving upgrade. Four engines are cut into the 51-car train. This easternmost 27 miles, bought by the Midland Terminal as the outlet for its line from Cripple Creek, is all that remains of the old Colorado Midland. A motor train runs one round trip a day for passengers.



Albertson, engineer, and S. H. Collett, fireman, with their engine on the Colorado Midland. From O. H. Albertson.

WITHIN a couple of years Oh Hell (as he was destined to be nicknamed) was firing switch and freight engines. Although he worked on the Colorado City-Leadville run most of the time, once in a while he saw the high spot of the Midland: Hagerman Pass, west of Leadville. As originally built, the railroad doubled back on itself three times, over trestles and through snow sheds, as it climbed the last lap up to the east portal of the short tunnel under the Continental Divide. This ladder of worry was known as the Midland Loop. The Busk Tunnel Company constructed a lower and longer bore to do away with the hazard, and traffic began to move through it in December of '93.

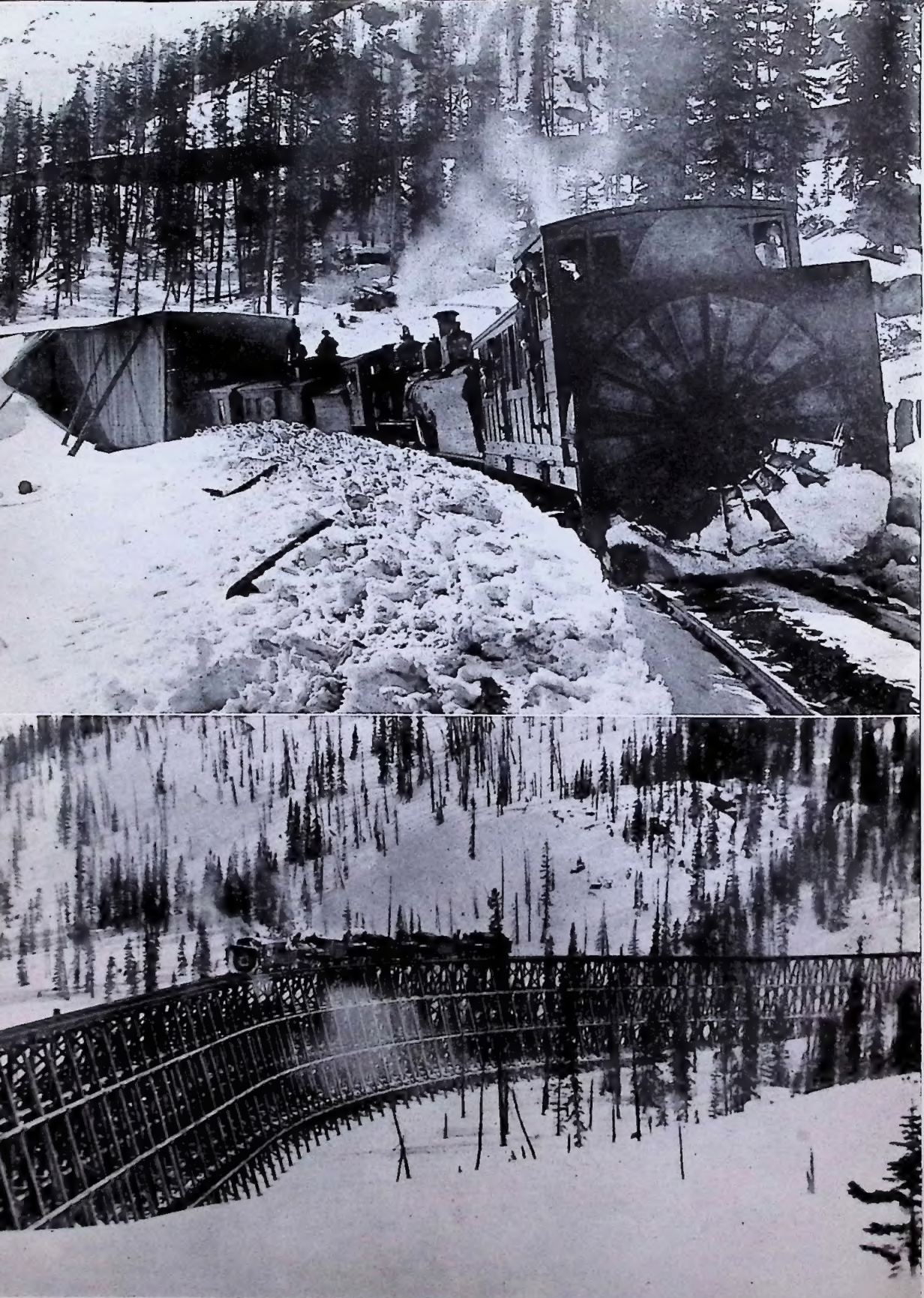
Snow was still a problem. Once that same Winter Albertson was called to fire a rotary pusher from Leadville to the new tunnel. His was the first engine behind the plow, which was throwing a stream of snow over itself, the engines behind it, and the countryside. It was no easy task to keep steam up, he declares, for the simple reason that so much of the stream landed on the deck that he shoveled more snow than coal into the fire box.

In 1894, he married, and toward the end of that year was borrowed by the Santa Fe, which then controlled the Midland, to work out of La Junta. It was here he picked up the monicker "Oh Hell." The engineer he was firing for kept asking Albertson's first names. Albertson kept repeating them, but the engineer either couldn't hear them straight or couldn't remember them. Albertson was getting disgusted toward the end of the run, and finally exclaimed "Oh, hell! Just remember that's what my initials stand for!" The throttle mauler was delighted by the incident and the story rapidly spread. "Oh Hell" it was forever after, the name being taken up by his friends on the Midland, to which he returned just before the American Railway Union strike of '94-'95 hit the Santa Fe.

He fired passenger in 1895 and '96, then became engineer on switch engines and extra freights. In '99 he turned full-fledged freight puller. "Getting up to freight engineer didn't take so long," he remarks. "But if you wanted to pull passenger, it seemed as though you were likely to go to your deathbed waiting for enough regular engineers to die off or be killed in wrecks so you could get a position."

For a while "O. H." engineered a switch engine on the transfer run between Colorado City and Colorado Springs. Trains left their road engines at the City; the transfer crew took them to and from the Springs.

While snow was no small matter over Hagerman Pass, west of Leadville, it was not as bad at the lower, east end of the line. There were a few slides, and cloudbursts were a constant menace. Oh Hell recalls the time he spent 72 hours making a round trip between Colorado Springs and Leadville—with one hour's sleep. There was no 16-hour law then. He worked out of the Springs firing the Leadville local. A rock slide at Idlewild was the first delay; the train was held up six hours while a blocked tunnel entrance was



Upper, W. H. Jackson. Now in Western Collection, Denver Public Library. Lower, probably a Jackson photo, courtesy R. H. Kindig.

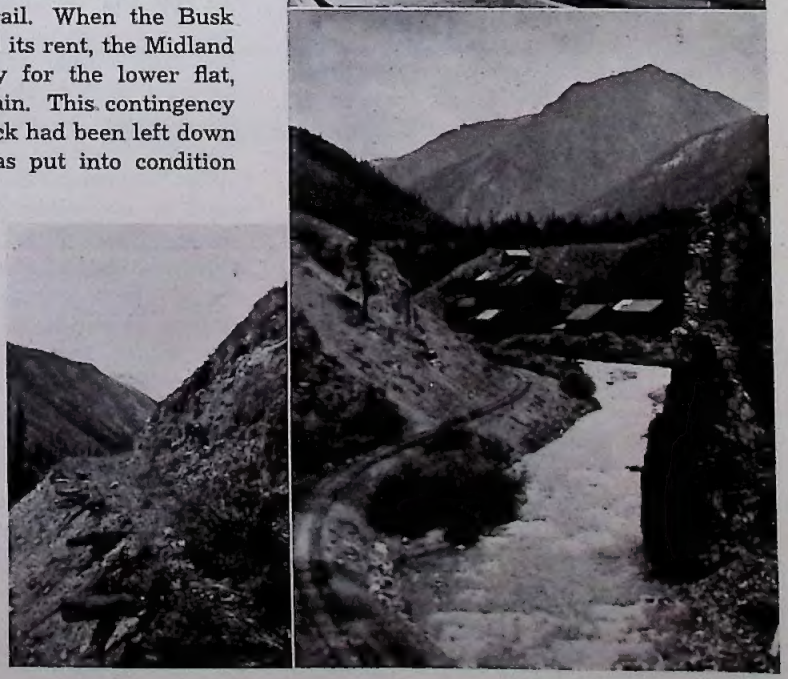
Snow was the Midland's undoing.

Except for a few years when the Colorado Midland rented the longer and lower Busk Tunnel, the road used only a short tunnel at the very summit of the Continental Divide, and paid heavy toll in snow fighting for its climb up the slopes to the tunnel portals. At one time the road was closed nearly all Winter by a train stuck in drifts. The rotary snowplow at left is near the top of the sweeping Hagerman Pass loops by which the Midland scaled the east side of the Divide above Leadville, and is running up-grade. The snow-shedded stretch of track near the top of the picture is the last loop of track before the summit tunnel. It was only on open trestles, as at bottom, that snow did not tie up the road.

cleared. When he arrived at Leadville, he had snoozed an hour when the dispatcher, short of helper crews, called him to fire an engine to Divide. Then back to Leadville, after waiting three hours for a section crew to blast a boulder off the track. As soon as he arrived at Leadville, he was called for the local to Colorado Springs. A cloudburst had washed out a bit of roadbed, and his train engaged in hauling section men to crib up the track so the train could pass. And so to Colorado City. If Leadville, instead of the City, had been his home terminal, he could have marked up "rest" on the board and been spared further duty. But if you were caught away from the home terminal it was just tough.

Other troubles of the Midland come back easily to this retired rail. When the Busk Tunnel Company raised its rent, the Midland decided it couldn't pay for the lower flat, and moved upstairs again. This contingency had been foreseen: Track had been left down over the Loop, and was put into condition without much trouble. One of the juicier Winters of the region descended shortly afterward. Early in 1899, a stock train of 18 or 20 cars and three engines—two in front, one behind—chuffed up the west side of the divide through a heavy snowstorm, and pulled through the upper tunnel. The crew found the storm much worse on the east side, so the conductor telegraphed from the small station at the east portal that the storm was very bad, and he wanted a plow to come out from Leadville and help him out. The dispatcher politely replied that the conductor had three engines and was going down hill, and what more did he want?

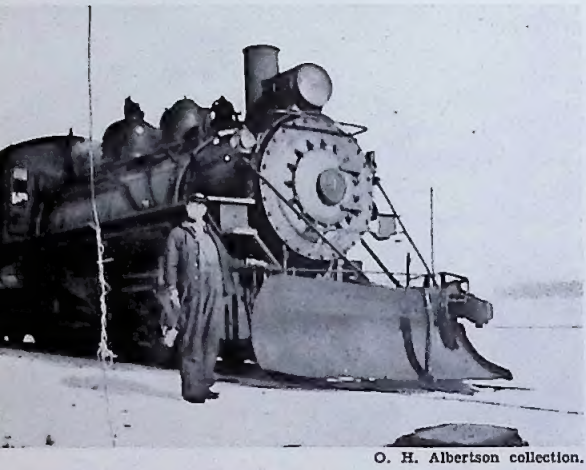
The skipper returned to his train and they tried to push on down, but could make no progress. The crew cut off the rear engine and the crummy and tried to back out. This attempt failed too. The wind laughed, and



Silverton memories. .

Along the rotted ties and eroded embankment at the right, the Silverton Northern once ran down the valley to Silverton, Colo., from Red Mountain. At far right is one part of the Silverton Northern which was, at least until recently, still intact although not operating. It is typical of the road: winding track, deep valley, a mill, and mountains on all sides. Silverton Northern locomotive No. 4, top, still stands in the shop at Silverton. O. H. Albertson once ran this engine over the track shown.

Jim Morley.



O. H. Albertson collection.

Albertson on the job.

At Mount Montgomery on the Southern Pacific narrow-gauge, O. H. Albertson posed beside Engine No. 1, formerly a Nevada-California-Oregon locomotive.

the snow swirled. All the stock froze to death or was suffocated by the all-enveloping drifts. The crew stumbled back to the East Portal depot and the train remained in the same spot for almost three months.

In the battle to reopen the line, the road's only rotary, working on the west side, broke a shaft. Grand Junction and Leadville were the two places capable of repairing it, and Grand Junction was much farther away and the line behind the rotary was well drifted. The shaft being light enough for a man to carry, some of the crew put on snowshoes and carried the vital part over the top of the mountains—the tunnel mouths were entirely lost under the drifts—to a plow working out of Leadville. The Leadville shops repaired the shaft, it was transported as far up the line as possible by train, then hefted back over the divide on a sled. The part was installed and the fight continued until the trapped train was freed, in the middle of April.

THE high peaks were in such contrast to his home country that in 1902 Oh Hell obeyed a longing for "God's country," where corn and alfalfa spread greenness over low-rolling hills, and he headed for the Chicago & Alton. On that road he worked as freight engineer between Bloomington and Venice, and later between Slater (Kan.) and Roadhouse, only to return in 1905 to the mountains.

Oh Hell took his family to Montrose, Colo., where there were relatives, and from there wrote the master mechanic of the Rio Grande Southern [Feb. '42 TRAINS] at Ridgway about work. The RGS had just enough men, it developed, but the m. m. would call him just as soon as an opening appeared. At this point Supt. Ridgway (son of the man after whom the RGS terminus was named) of the Silverton Northern wired the m. m. of the Rio Grande Southern that he was in need of an engineer. The m. m. replied that he had none of his own to spare, but could get a man he didn't know anything about, but who looked good. Ridgway said fine, he'd meet Albertson at Ouray the next morning.

Oh Hell was working in a hay field when the news came. He touched home just long enough to pick up his grip, which his wife, already "in the know," had packed, and then he grabbed the afternoon train from Montrose to Ouray. He spent the night in the box canyon town, and met young Ridgway the next morning. The two set out in Ridgway's buckboard for the little mining center of Red Mountain, highly elevated end of the Silverton Northern's Red Mountain line. Here they boarded the train for Silverton, Oh Hell riding the engine in order to learn the road as soon as possible. That afternoon he made a trip up the mountain and back with the SN's master mechanic, and the next morning started taking trains up with only the fireman as guide. Air was straight, couplers automatic.

The Silverton Northern was still managed by its builder, Otto Mears, and consisted of two lines out of Silverton: one winding over Red Mountain, the other heading up the main canyon of the Rio de las Animas Perdidas—River of the Lost Souls. This second line entered a narrow canyon a couple of miles above Silverton, then came to Howardsville, where a short branch left to run up a side canyon to Green Mountain. The main continued up a comparatively spacious valley, walled in by slide-bearing mountainsides, to Eureka, and then climbed a good four per cent to Animas City, at Forks of Animas.

Each line used one engine. One was SN and the other an outside-frame job borrowed from the D&RG. Oh Hell worked primarily

on the Red Mountain branch, sometimes making two or three trips a day up to the mines at the top end. There was plenty of four per cent between Silverton's 9300 feet and Red Mountain Pass' 11,018 feet. From the pass the railroad dropped down to Red Mountain, named for the block of three hefty brick-red peaks that play catch with thunderheads immediately to the east of the town. The track once went three miles beyond Red Mountain to Ironton, but had been removed by the time Albertson was maneuvering freight up and down the big hill. A horse-drawn stage, instead of the railroad, carried passengers over this route. Trains "usually didn't take more than two or three hours" to make the 14 miles from Silverton to Red Mountain. The railroad did not actually run into the latter town but had spurs to nearby mines. One such spur was seven per cent; it was all the engine could do to pull one ore-laden car out of it.

Sometimes Oh Hell took freights from Silverton to Forks of Animas. He ran the construction train that was helping to build (until Winter came) a mile branch to an ore mill above the Forks, with a rise of seven feet in every hundred, or close to it. As he remembers the routine—and he is not too positive this is correct—a passenger train carrying mine workers ran from Silverton to Forks of Animas early in the morning; that train returned to Silverton, and then the engine hauled freight (mostly coal and mine machinery) to the mills along the same route and on the Green Mountain branch. This freight worked most of the day setting out cars and picking up loads of silver ore concentrates. After the engine brought its day's catch back to the D&RG at Silverton, it coupled onto the passenger coaches and went after the mine commuters at Animas City and Eureka. While Albertson was working on this line, a section of the frame broke on his engine. Repairing the break at Durango would have taken too much time. Motive power was at a premium and the D&RG couldn't lend any. Supt. Ridgway suggested having it repaired at the blacksmith shop of one of the large mills on the line. The locomotive was jacked up, and the afflicted parts removed and welded. When the men tried to put things together, they found the welder hadn't lined up the bolt holes. The search for the proper tools to make the new bolt holes was carried to Denver before the desired equipment was found. New bolts, to fit the relocated holes, were machined in Silverton. The engineer's pay was $5 a day, nothing for overtime, and the engineer did all the work on the engine. In this situation Oh Hell worked through one night, the next day and following night putting the iron horse in shape.

We blush at our mistake.

Is our face red! Last month we announced a large, lithographed three-color railroad map of Pennsylvania. But we announced it as 11″ x 17″, not so large after all. We meant 17″ x 22″, which is a quite respectable size.

This railroad map includes not only everything on the Pennsylvania map in the October TRAINS, but also any corrections received since publication of the original. It is complete with index, folded in a handy-size, heavy manila envelope. Price postpaid, 50 cents.

The small excerpt is actual size but shows only the black and white portion. Rivers and other water are shown in blue, and topography is light brown. Every railroad, past and present, is included.

Tentative plans are to make this the first of a series of state railroad maps.

Actual-size fragment. Rivers and topography not shown in this sample.

Jim Morley.

Silverton, Colo., top of the narrow-gauge country.

The Silverton, Gladstone & Northern once crossed the Silverton Northern in the foreground, but when the SN took over the SG&N they both used the same track into Silverton. The Denver & Rio Grande Western narrow-gauge [August TRAINS], Silverton's main connection with the outside world, comes in from the south through Animas Canyon, right background. Silverton's elevation is 9270 feet; peaks in background are over 13,000 feet.

The first snowfall that year came in November. Oh Hell took the train up to Red Mountain as flakes drifted down, leaving a few inches on the rails for the pilot to brush over. That afternoon the little engine twisted down toward Silverton through on ever-whitening world. It snowed hard that night, and came morning the drifts plainly announced that no more trains would run on the Red Mountain line that Winter. The numerous slides and drifts would have required a rotary plow, and Mears just didn't figure it was worth it; no attempt was ever made to keep the road open in the white months.

The line to Forks of Animas and the Silverton, Gladstone & Northern, then a separate outfit, were at a low enough elevation so that, with luck, flangers and wedge plows would do the trick, but suspension of the Red Mountain branch put Albertson out of a job. He became a carpenter's helper at Gladstone, building some big mills. Then word came that his father-in-law, 62 miles away at Montrose, was desperately ill. The direct stage route had, of course, stopped operations. To go by rail would have meant the 231-mile trip via Durango on the D&RG and the RGS.

The quicker way was to use the horseback service maintained in Winter over the 28 miles between Silverton and Ouray. This followed a hard-packed trail over the railroad grade and (from Red Mountain to Ouray) Mears' stage road. The stable man at Silverton gave Oh Hell careful instructions not to touch the reins of his old but well trained mount, nor to say anything to him—just let him go by himself. So, grip in hand and bundled well against the cold, Albertson started on his way up Red Mountain Pass on a swaying horse, over the same route he had traveled so often on a slightly different mode of transportation. At Ironton the horse

automatically stopped at the regular resting point, where man and beast stayed an hour before the second lap. When he arrived at the Ouray stable, Albertson was almost frozen. He says it took the men two hours to pry him off the horse, so numb, stiff and sore was he. For several hours afterward he could not stand up. He was glad to be riding a train on the last stretch from Ouray to Montrose.

He didn't like the new super of the Silverton Northern when he returned the next Summer, so looked around again. In September of 1906 Oh Hell found a job with the Utah Copper Company at Bingham, Utah, running a dinky train which received dirt dug off the top of the copper ore layer. In 1907 a Rio Grande engineer, long a friend, found work for both of them on the Southern Pacific, running freight from Sparks to Winnemucca. But jobs again became scarce and in March, 1908, he was laid off. He went south to Long Beach, Calif., and worked on the fire department there. He was at home, for the fire engines were steam-propelled.

In 1911 O. H. went to work for the narrow-gauge Nevada-California-Oregon, between Reno, Nev., and Lakeview, Ore. O. H. says, "The road didn't furnish seat cushions, so the boys put waste, held down by a piece of cloth, on the seat box to ease the bumps. I sent east for a good cushion, and soon sent orders for five of the other men when they discovered what they had been missing."

Albertson returned to the SP in 1913, and ran construction trains for six months on the then-new Fernley-Susanville line. Then it was the Tonapah & Goldfield. More steady work—and again no seat cushions, so old faithful was used.

Courtesy Jim Morley.

In 1916 the SP called Oh Hell back and put him on its three-foot line from Keeler to Mina, the remains of the old Carson & Colorado, originally built by the Virginia & Truckee across high desert country from Keeler, Calif., to Mound House, Nev.

This declining pike wandered a hundred miles along the east escarpment of the Sierra Nevadas, up Owens Valley north from Keeler, across the state line into Nevada, up over the contortions of Montgomery Pass, down into jack-rabbit country, and up again to Little Summit. Then a long down-grade, a wye at the junction of the Candelaria branch, down past Belleville, down a long wash and out into an old lake basin to meet the standard-gauge Tonapah & Goldfield at Tonapah Junction. The narrow-gauge proceeded with a third rail inside the T&G track, along the edge of the dry lake and on into Mina, southeast of Reno, where the SP standard-gauge took over.

Freight was everything: ore, sheep, lumber, miscellaneous goods. Most trains used three locomotives, usually all in front or with one cut in just in front of the little red chariot,* for the wooden-underframe cabeese weren't fit to be shoved against. A combination car attached to the rear of a freight sufficed for the none-too-booming passenger business. Trains stopped for water every 10 or 15 miles. The country was uncomfortably warm in Summer and uncomfortably cool in Winter. January and February brought lots of snow and ice to this desert narrow-gauge. Wedge plows, bolted onto the pilots of engines, provided the only means of attacking the drifts. Often trains would become stuck during a storm, and during the night the train would freeze in solidly as cold winds bore across the sagebrush. When the blizzard abated the crews would dig out their engines one by one, couple them together, and yank out a few cars at a time, or, if the train were headed up a grade, try backing down the hill to break it loose.

It was just another sizzling Summer day of 1923 when Oh Hell was handling a freight south over the big hump, aided by two

* Southern Pacific cabooses are bright red.

Old Nevada-California-Oregon locos.

The Nevada-California-Oregon once was quite a narrow-gauge road, 242 miles of three-foot track. It was later bought, part by Western Pacific, part by SP.

Series by Carl Friburg; from O. H. Albertson collection.

Three iron mules, sometimes even four, were needed to pull Espee trains up Montgomery Pass in the Nevada sagebrush. Here they are working around the big loops, shown from a distance in the third picture,

helper engines in front of his locomotive. At the top of the pass the second helper uncoupled from Albertson's charge and the two light engines, per standard practice, pulled away ahead of the train and lit out down the grade toward Benton. Oh Hell had a student engineer and a student fireman. He cautioned the engineer to drop down the hill slowly. The head helper engine also had a student at the throttle. As the freight drifted along, the engine crew sighted what first seemed to be a dust cloud rising from a cut a quarter-mile away. But Oh Hell wondered; the cloud wasn't yellow enough for dust; it looked more like steam. "A little trouble down there, a broken pipe or something," he thought, and cautioned the student to take it even easier. All the track leading to the cut was visible. Suddenly a figure appeared from the cut and ran up the track toward the advancing train. As he was obviously going to flag them down, O.H. answered him with two whistle blasts. The figure slowed to a walk, and swung aboard the engine as it eased to a halt.

He excitedly told of a wreck, everyone dead but himself. The freight moved on down to the scene of disaster. The two locomotives lay mangled, one on each side of the track, artistically arranged. The situation was not as bad as the flagging fireman had thought it, but the fireboy on the lead engine had had both feet cut off as he tried to escape through his cab window, and the regular engineer of the same engine was badly scalded; Oh Hell covered him with valve oil and carried him to the caboose. The rest of the crews came through all right, although the flagger, fireman of the second engine, was the only person not to be at least knocked unconscious.

The accident was reported to Mina from Mount Montgomery station, a half-mile away. A special train carrying doctors and a nurse was dispatched. Oh Hell's engine had meanwhile leaked so much steam it had died, and with its train had to be pulled out of the way. That nurse was the mother of the badly injured fireman, who died of gangrene two days later in a Los Angeles hospital. The crack-up was attributed to fast running on a curve by the student.

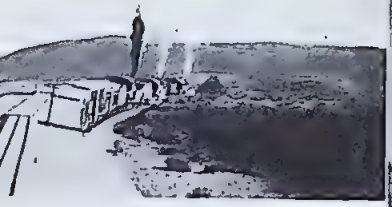
Later years were spent on the Espee narrow-gauge Keeler-Laws division, up and down the valley that is now an alien evacuation center. In the late afternoon Mount Whitney, highest peak in the United States, cast its shadow across the rattling box cars.

OH HELL was pensioned in February, 1937, and retired to a trim cabin on a quiet hillside above Redwood City, Calif., but often takes trips around the state. Melodious whistles and blasting air horns of the SP pentrate day and night. The faithful seatbox cushion, bought for a bucking N-C-O engine, replaces the original cushion of an arm chair.

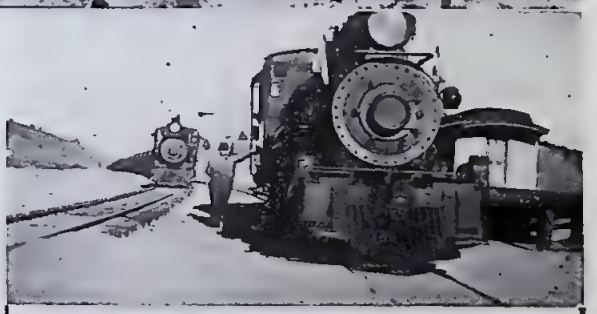
The Colorado Midland? Gone in '21, except for the stretch from Colorado Springs to Divide, where five-engine ore trains of the Midland Terminal still hold forth. No more wild-flower excursions, no more bucking drifts over Hagerman Pass, no more blasting through Hell Gate. The business just wasn't there.

The Silverton Northern? Over Red Mountain Pass, the "million-dollar scenic highway" runs beside twisting rows of rotting ties. The grassy valleys no longer feel the cinder showers, the rocky hills no longer return the chugging of the exhaust and the lonely whistle cry.

Utah Copper carries on.



near Basalt. The pictures were taken by Brakeman Carl Friburg, who often rode the running boards with his camera handy. O. H. Albertson is in the cab of the third engine, old No. 1. In the lead are engines 5 and 8. Just above the map you can see No. 5 already cut off, and in the lower corner, No. 5 and No. 8 as they looked when Albertson's train reached them in July, 1923.



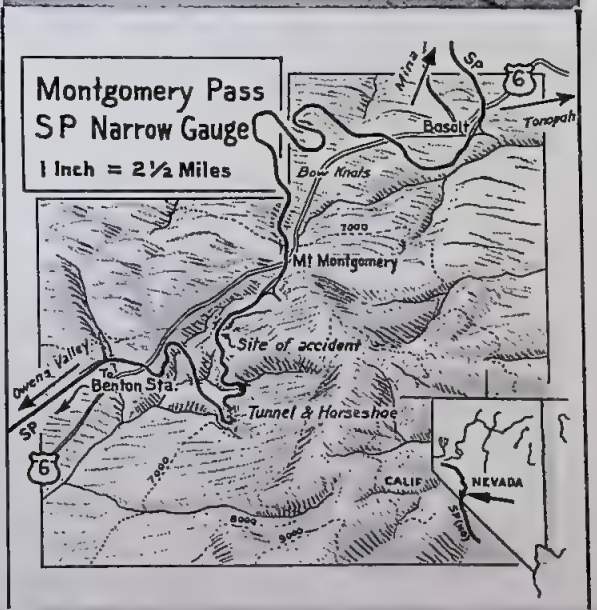
The Espee isn't doing so badly.

The Nevada-California-Oregon has been bought up and split up; parts standard-gauged for both Western Pacific and SP, parts abandoned.

The Tonapah & Goldfield survives.

Southern Pacific narrow-gauge discontinued operation from Benton Station to Mina four years ago, and trains rarely come up even as far as Benton Station. Trains leave Keeler six days a week, but do not carry passengers.

Oh Hell has souvenirs of them all, and well. But he treasures most the letter of introduction that started him railroading.



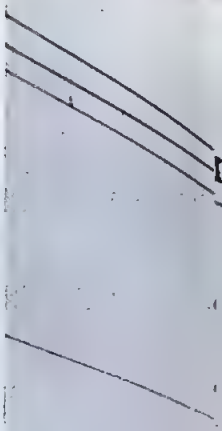
Below, the uphill end of the tunnel as it now appears, with the rails buried under a blanket of desert snow. The map shows the arrangement of the tracks over the pass and the location of the accident.

Jim Morley.

Charles A. Brown, Central Electric Railfans' Association, 1240 Edison Bldg., Chicago.

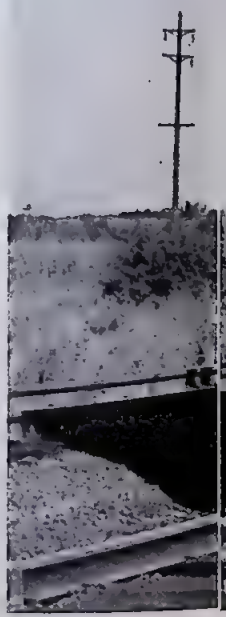
Typical train.

Chicago, South Shore & South Bend passenger train with combination baggage-coach at head end. These steel motor cars are probably among the heaviest per foot length in the world, 65 to 67 tons for 60 feet.



South Shore Line

★ Once an interurban, Class 1 electric railroad has big business in heavy industrial area.



FROM Chicago around the south end of Lake Michigan to Gary, Michigan City and South Bend, 90 miles, run the orange passenger trains of the South Shore Line, more properly the Chicago, South Shore & South Bend Railroad. This electrically operated heavy Class 1 railroad is the direct descendant of an interurban line, the Chicago, Lake Shore & South Bend, which in 1925 was nearly bankrupt and quite worn out.

Samuel Insull saw the possibilities in the heavy industrial territory along the south shore, bought the old decrepit interurban, organized the new company, and in effect built a new railroad along what was already a fine, straight right of way. Trains run from Chicago south for 14 miles to Kennsington on the Illinois Central suburban tracks, then head east on South Shore's own line. The power is 1500 volts direct current.

Sixty per cent of revenue comes from freight, pulled in 70- or 80-car trains behind double-headed 1440-horsepower electric locos. Sharpest curve, 16 degrees, does not limit the road in use of foreign equipment.

George Krambles, Central Electric Railfans' Association.

Car 15, as is.

To cope with present-day traffic loads, South Shore has lengthened its car No. 15 from 60 feet to 77'-6". Car No. 14 is being similarly stretched. Cars were originally built short not because of curves or other right-of-way limitations, for the line can and has handled full-length steam railroad cars, but to allow greater flexibility in making up trains of any passenger capacity from a short single car on up. Traffic on the line, especially commuting traffic from Gary, has been above original estimates, necessitating trains of four to six cars on the average. In the rebuilding of car 15 the interior was mod-

ernized, forced ventilation installed, the roof line cleaned up and simplified, and the color scheme changed. Old colors were traction orange with maroon letterboard. Car 15 is maroon below the belt rail, orange above. Car 14 will have still another color scheme, as this is one point in the modernization which has not yet been fully worked out. The illuminated destination signs and train number indicators, which were a distinctive feature of the South Shore, have disappeared in the modernized car. No. 36, at right, is similar to the original car 15. Notice the standard diaphragm and air hoses.

George Krambles.

Edgewood Cutoff

★ **Operating man's dream is this 169-mile, nearly gradeless, nearly curveless Illinois Central freight line.**

THE railroad is never finished. It is a living, growing organism, always being expanded here, contracted there, improved and refined to meet competition and the changing industrial and commercial scene. New railroad construction is scarce now because the American network of rails quite well covers the country, but changes of alinement are constant, and new cutoffs to shorten mileage or to improve grades and curves are frequent.

Had the Illinois Central in the 1920's looked upon its system as complete, it would not now have its high-capacity freight line north and south between the western tip of Kentucky and central Illinois. This is a civil engineer's and operating man's dream of a railroad that shortcuts the main line and vastly increases the freight-carrying possibilities of the IC's principal traffic trunk. The 169 miles of the Edgewood Cutoff, opened in May, 1928, include a 63-mile stretch of dead-straight track, no grade steeper than 0.3 per cent, or less than 16 feet to the mile, and no curve sharper than 1 degree 30 minutes, or about two-thirds of a mile radius. Yet for the most part the line runs through country which has never before heard the locomotive whistle and the rumble of cars: the eastern foothills of the Ozark Mountains. The remarkable alinement was obtained at the cost of three tunnels, 12,657 feet of trestle, 16,111,000 cubic yards of excavation, and plenty of masonry, drainage piping, and other foundation work.

By means of the cutoff, the through north and south haul is shortened by 22 miles, traffic is moved more rapidly because the new line has fewer grades and curves, and the railroad obtained a second crossing of the Ohio River. By use of the bridges at both Cairo and Metropolis, the railroad is assured of

F. T. Richardson, 1634 E. 53rd St., Chicago, Ill.

Remember when?

A scene atypical of present-day events. Railfan excursion train at Tunnel No. 2 on the Edgewood Cutoff. This is one of the few passenger trains ever to travel over this line.

Construction work in the vicinity south of Tunnel No. 1. Illinois Central.

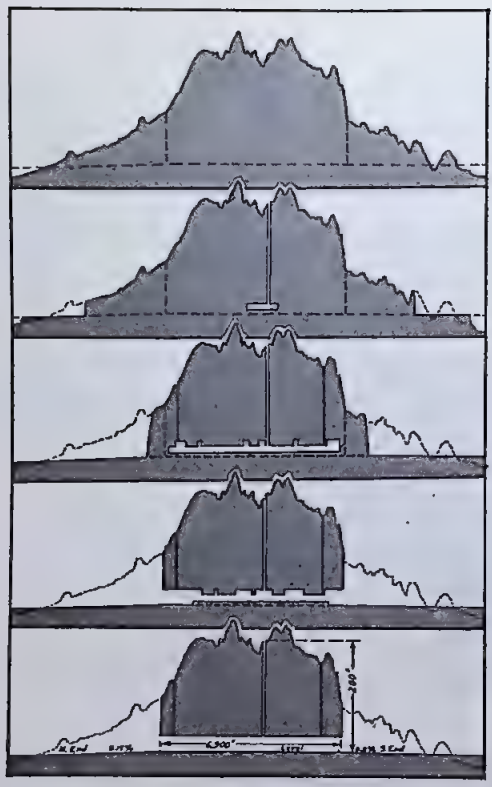
uninterrupted through traffic even in the event of trouble at either crossing.

Like most of the railway systems of the United States, the Illinois Central lines have been built up by the purchase or consolidation of various railroads and, as a consequence, the IC has come into possession of sections of railroad that were built without considering the volume of traffic to be handled in later years. That portion of the Illinois Central System north of the Ohio River between Cairo, at the southwestern tip of Illinois, and Chicago was constructed in the early fifties, and from the time of its construction until the acquisition of the line south of the Ohio River in about 1832 it was operated independently.

The topography of the country is such that it was comparatively inexpensive to get straight alinement and easy grades on the original line from Chicago as far as Centralia, but that part of the line from Carbondale to Cairo traversed rough hilly country, making it costly to obtain easy grades or curvature, so this portion was constructed and has been operated since with maximum gradients of 0.8 per cent northbound and 0.7 per cent southbound, and maximum curves of 5 degrees.

While the Illinois Central before 1882 maintained its southern terminus at Cairo there were being constructed and operated, by different corporations, several railroads which later formed a continuous line north out of New Orleans, having its northern terminus on the Kentucky shore of the Ohio River just across from Cairo. This railroad encountered many obstacles in its construction and as the territory south of the Ohio River to Fulton, Ky., and Jackson, Tenn., was hilly, the grades were steep and the curvature excessive.

About 1882 the IC obtained control of this line, giving it a continuous railroad from Chicago to New Orleans, cars at that time being ferried across the Ohio River. The business increased to such an extent that it became necessary to provide better means of crossing the river, so in 1889 the Cairo bridge was constructed, at that time one of the most expensive and modern bridges and adequate, it was thought, to handle the business for the life of the structure. It was a single-track bridge connecting two single-track railroads, and while consideration was given to the possibility of constructing a double-track bridge, that feature was dismissed because of the great cost and the inability of the engineers and operating men at that time to fore-



Tunnel No. 2 is 6900 feet long.

Three tunnels are shown on the map, page 21. They are between Madrid and Hess in the lower portion of the map, and bore through the foothills of the Ozarks for a combined distance of more than 10,000 feet. The side elevation diagram shows the tunneling as done in Tunnel No 2. The shaft, 7 x 14 feet, was dug 200 feet to the proposed tunnel floor and work proceeded toward the tunnel ends. At the same time the approaches were dug to the portal locations, 4200 feet long and 85 feet deep. All tunnels are 18 feet wide and 23 feet 3 inches high above the top of the rail. Work was started in 1925, finished in 1927.

see the enormous volume of traffic that eventually would be handled in the Mississippi Valley. Upon completion of the Cairo bridge, the Mobile & Ohio Railroad was given privilege to use the bridge and uses it at the present time. [The M&O is now the Gulf, Mobile & Ohio through consolidation with the Gulf, Mobile & Northern in 1940. See January 1941 TRAINS.]

In 1897 and 1898 the business had reached such a volume that it became necessary to construct a second track between Chicago and Fulton, Ky., the Illinois Central about that time acquiring the line of railroad between Louisville, Ky., and Memphis, Tenn., crossing the original main line at Fulton.

In the construction of this second track the grades between Fulton and the south bank of the Ohio River were reduced from 1.1 per cent to 0.8 per cent. The grades from Cairo to Carbondale were not changed, the second track also being constructed on a maximum gradient of 0.8 per cent.

Since 1902, when the second track, Chicago to Fulton, was completed, the tonnage passing over the Cairo bridge increased over 200 per cent before the war. The number of trains on the double track between Fulton and Centralia was such that some improvements would have to be made in the way of building additional main tracks or providing larger motive power. This was accomplished in part by strengthening the Cairo bridge so as to permit the operation of heavier engines.

The freight terminal on the north side of the Ohio River was at Mounds, where a large yard was maintained, and it is necessary to push tonnage trains out of this yard, the northbound trains requiring a pusher to Anna, Ill. It was also necessary to use pusher service southbound from Makanda to Anna. The pusher service naturally increased the train density, and during peak business the two tracks in this territory were inadequate properly to handle the business. Likewise, the traffic moving between Fulton and Paducah, Ky., over the steep grades and single-track railroad was such that relief was necessary, the business being such that the savings would pay the fixed charges on the improvement.

There was other construction work on certain branches in the coal fields that would have been necessary for economical operation, all of which would not have to be done in case the new line was constructed between Edgewood and Fulton, as this line passed through the coal deposits of southern Illinois.

This was the situation that confronted the management of the railroad before the time a decision was reached to construct the Edgewood Line.

In 1917 the Chicago, Burlington & Quincy Railroad constructed a modern double-track bridge over the Ohio River at Metropolis, upstream from which point (at Brookport) the Illinois Central had been maintaining a transfer service for years. This bridge was not used intensively, and during the World

War arrangements were made to abandon the ferry service between Paducah and Brookport and utilize this bridge for Illinois Central trains.

The problem confronting the engineers was whether it would be better to reduce grades to 0.3 per cent on the existing line between Edgewood, Ill., and Fulton, involving in many cases a relocation of the railroad, the provision of a third track for part of the distance, and the rebuilding of the Ohio River bridge at Cairo, or to construct a new line using the CB&Q bridge at Metropolis.

Surveys were made and detailed estimates prepared over both routes and careful analysis made as to volume of business that could be diverted to this new route. The matter was further complicated by the fact that the line to Louisville between Fulton and Paducah had grades in excess of 1 per cent and in order to economically handle the business would have to be rebuilt. As a result of this analysis and investigation a decision was finally reached to build the new line.

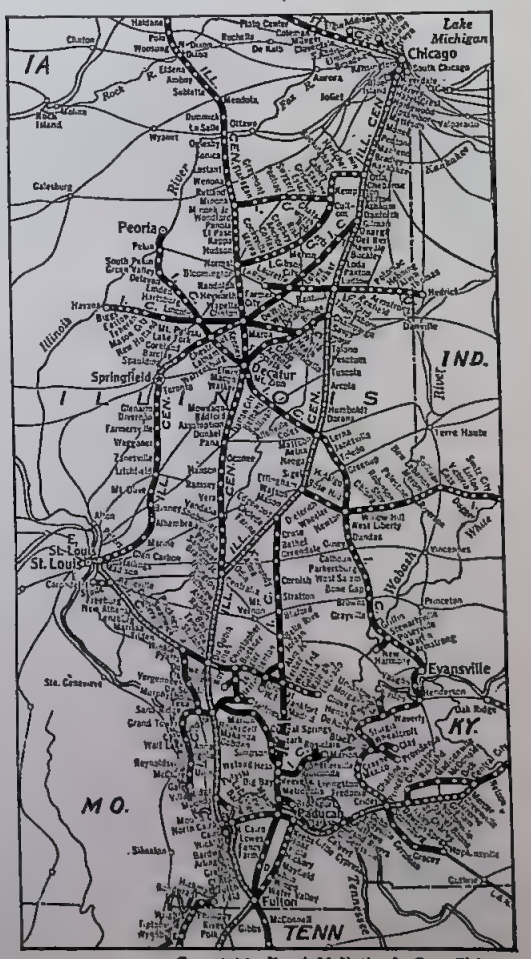
One of the outstanding reasons the new route was adopted was the saving of 22 miles in distance and the ability to obtain a crossing of the Ohio River that was comparatively free from the possibility of damage by high water during the Spring floods. The investigation showed a volume of business present and problematical such as to justify building on a 0.3 per cent grade, which was adopted.

Accordingly, preliminary surveys were started in 1916, parties were put in the field in Illinois and Kentucky and work continued intermittently until final location was adopted in 1924. Preliminary survey and trial location lines were run on 899.83 miles before a final location 168 miles long was adopted, the field parties living in farm houses near the work and in camp cars.

The engineering was handled by an assistant engineer in charge of the work in Illinois and one in Kentucky, both reporting directly to the engineer of construction. Their respective divisions were divided into residences about 10 miles in length, in charge of a resident engineer having a field party consisting of instrumentmen, rodmen, chainmen and axemen in sufficient numbers to handle the work. Due to the unsettled country it was necessary to provide some of the resident engineers with camps, and where necessary sectional houses were provided, equipped for field office and for cooking, dining and living quarters.

After the line was located, descriptions for right of way were prepared and options were taken by right-of-way agents. A total of 3622 acres was purchased in Illinois and 1249 in Kentucky for right of way and 690 additional acres were purchased for the construction of reservoirs for locomotive water near Edgewood, Xenia, Bluford and Thompsonville. Extensive surveys were made and rainfall data assembled prior to the construction of the reservoirs. Concrete and earth dams were erected to impound the water.

The actual construction work was carried on simultaneously at all points, and during the peak of construction there were 42 steam and gas shovels varying in size from ¾-yard dipper to 4-yard dipper; also 1231 narrow- and standard-gauge dump cars, 110 locomo-



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Next month:

The intriguing tale of a railroad, financially crippled, offered for sale at public auction 43 times, which finally lifted itself by its bootstraps to regain a place among solvent companies. Frank P. Donovan Jr. describes it in "Peoria Gateway Line," the story of the Minneapolis & St. Louis.

tives, 14 elevating grading machines, 220 wagons and outfits with 950 head of livestock, 62 trucks and tractors, 12 hoisting derricks and pile drivers, and 61 pumps, together with 20 air compressors and 8 Diesel engines with a full complement of drills and other machines needed on the work.

The three tunnels are 800, 6985 and 2600 feet in length. Each presented an individual problem in construction. Tunnel 1, 800 feet long, was excavated by the trapping method, using a top heading. The sandstone and shale in this tunnel appeared to be self-supporting when first excavated and did not need immediate lining. After exposure for several months a large amount of spalling was noted and a permanent reinforced concrete lining with a minimum section of 12 inches with concrete portals at each end was installed.

Tunnel No. 2, 6985 feet long, presented an entirely different problem in construction. The portal cuts necessitated the removal of 600,000 cubic yards of rock and earth and, owing to the time required to excavate the portal cuts, it was decided to sink a 7 by 14-foot shaft 200 feet deep near the center of the tunnel. The center heading method of construction was followed and two 10 by 10-foot headings were driven simultaneously in both directions from the shaft, using air drills and air-operated shovels with electric locomotives hauling the excavated material to the shaft where it was hoisted to the surface.

In order to carry out the work, the contractor erected a large power plant with six Diesel engines, two of 200 horsepower and two of 100 horsepower, connected with three air compressors capable of compressing 3000 cubic feet per minute. The engines burned crude oil and a 5000-gallon storage tank was provided. Some water was encountered and was pumped to the surface through the shaft. The center headings were completed to within 100 feet of each portal and then buffer sections were left intact to protect the tunnel section from being shattered by the explosives used in loosening rock in the approach cuts.

Concrete for lining was spouted from the mixer direct to a hopper 10 feet above grade outside of the tunnel, dumped from this into 1-cubic-yard, 24-inch-gauge cars and transported by storage-battery locomotives to that section of form which was being filled. The loaded concrete cars were hoisted to a platform, moved by manpower opposite any one of four chutes which discharged directly into the form. The second car of concrete was immediately hoisted and the empty one moved to the hoist at the other end of the traveler and lowered to the track. At the same time a three-foot-gauge track under the traveler was being used by 20-ton locomotives pulling trains of rock and earth from the tunnel headings.

Engineering of this tunnel so that its center line would accurately meet the track line at each end presented an unusual problem. This line had to be carried down the center shaft, only 14 feet long in the direction of the track, and then extended in both directions. Extreme accuracy was necessary and special instruments were needed. When checked later the tunnel alinement was only 1 3/16 inches off.

Tunnel No. 3, 2600 feet long, presented another different problem of construction and was built by the top heading method, the semicircular or top part of the tunnel being removed first, after which the center and bottom headings were removed. The material encountered required lining as the work progressed in the heading; therefore, timber lining was installed and will remain during the life of the timber. This tunnel was excavated of sufficient size so that, when the timber lining has served its useful life, a concrete lining can be installed over the timber lining and still leave the required clearance. The timber lining was painted with fire-resistant paint.

Track laying started immediately on completion of the grading. Although 90-pound rail was originally laid, tie plates were so punched that 110-pound rail could later be used without changing the plates. All ties

were creosoted, and four sections of test ties were installed to determine the relative merits of various kinds of wood and types of treatment.

The line, single track, has passing sidings about every six miles and an extensive yard and engine terminal about midway. This is the third track the Illinois Central needed to eke out the capacity of its main line, a third track of far greater capabilities, because of its light grades and curves, than could have been built along the original route. In the years since 1928 it has well proved its worth, and right now it is one of the foresighted measures which is enabling the American railroads to haul far more freight than they have ever hauled before.

Edgewood Cutoff.

The six photos below depict some of the construction work in the beautiful country of the Ozark foothills through which the Edgewood Cutoff travels. All scenes are in the vicinity of the three tunnels; the south portal of Tunnel No. 1 is at the lower left and the north portal of the same tunnel is at the lower right. Because much of the earth formation consists of soft rock it was necessary to line the walls of Tunnel No. 3 with native timber, and the excavation was made large enough to allow for future construction of a concrete lining to cover the timber lining. The north approach of Tunnel No. 1 runs to a depth of 73 feet and is 250 feet long, while the south portal is 74 feet deep and 400 feet long. The approaches to this tunnel were dug by the trapping method: A small tunnel, 6 x 6 feet, was cut into the hill. An opening through the roof of this tunnel allowed workmen to drop excavated earth into cars below to be hauled away for fills.

Illinois Central.

Its bread and butter, freight; its

"Here she comes; there she goes," might be a description of the *Royal Blue* pictures above, taken near Manville, N. J. The *Royal Blue* is the Baltimore & Ohio's crack New York-Washington train, shares the pride of B&O's loyal employees with the all-Pullman *Capitol Limited*, Chicago-Washington-New York; the *National Limited*, St. Louis-Cincinnati-Washington-New York; and the *Ambassador*, Detroit-Pittsburgh-Washington-New York. But the

Top, Donald W. Fuller, 60 Glen Ave., Glen Rock, N. J.; bottom, Frank Quinn.

Herbert Welsberger, 8798 21st Ave., Brooklyn, N. Y.

pride, the *Blue* and the *Capitol.*

road's bread and butter is its freight. At top left is a B&O Santa Fe type slow freight locomotive at the head of 134 loaded coal cars climbing from the Potomac River to Hagerstown Yard of the Western Maryland, assisted by two Western Maryland locomotives on the rear. At bottom right a fast overnight merchandise train from New York arrives in Pittsburgh. Typical passenger train at bottom left is shown near Jersey City.

On the covers.

At Hillside, N. J., one of the Lehigh Valley's specially streamstyled Pacific-type steam locomotives waits for the *Asa Packer*, which is pulled from New York and Newark behind a Pennsylvania Railroad electric locomotive. Robert LeMassena, 398 N. Maple Avenue, East Orange, N. J., took this front cover photo. The back cover was taken somewhat by accident with a cheap vest pocket camera, but turned out surprisingly well for Jim Morley, the author of "Oh Hell Albertson" in this issue. It is a Southern Pacific train sliding down the west slope of the Sierras.

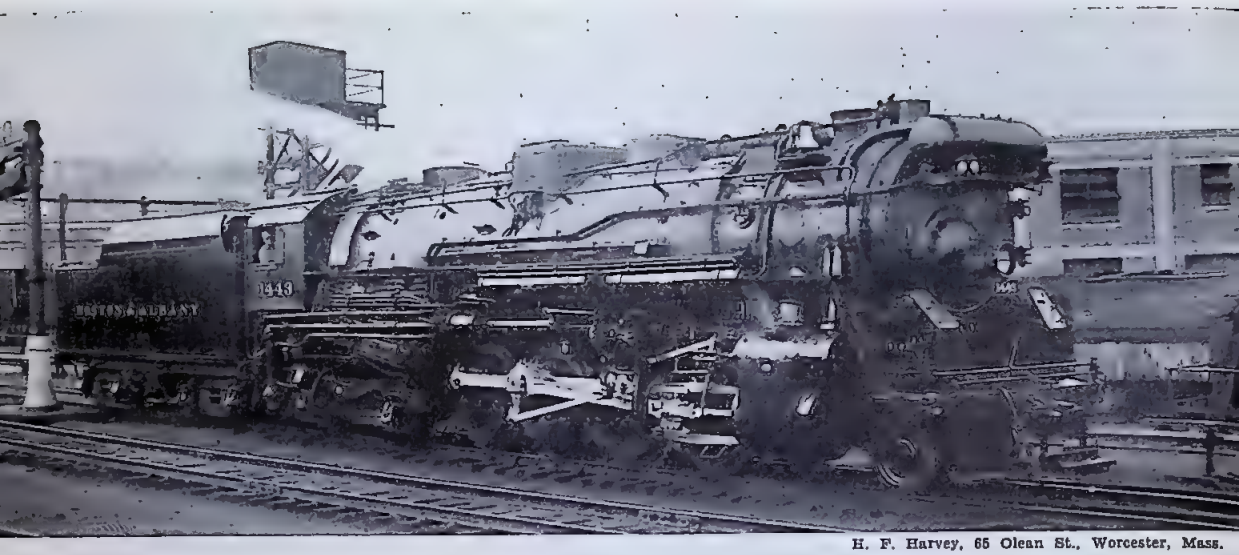
Baltimore & Ohio.

Ten-Wheeler and train on the SP's narrow-gauge.

Sandwiched in between Death Valley, lowest point in America, and Mount Whitney, highest peak in continental United States, is the little-known three-foot-gauge line of Southern Pacific, 101 miles of narrow track through wildly desolate country in the very shadow of the eastern Sierra Nevada escarpment. To the south the narrow-gauge connects via standard-gauge track with Mojave and Los Angeles; to the north it formerly ran through to Tonopah Junction and thence via standard-gauge to the main Overland

F. J. Peterson, 1784 S. New Hampshire Ave., Los Angeles, Calif.

Route east of Reno. For the venturesome passenger this was an out-of-the-ordinary alternate route from the East to Southern California, but in recent years lack of traffic caused abandonment of the northern end of the narrow-gauge and the southern end is used for freight only. Ten-Wheeler No. 22, shown above on a freight train near Keeler, Calif., looks typically Southern Pacific, but it is a narrow-gauge locomotive with a surprising pedigree. It was at first Florence & Cripple Creek 22, later Nevada-California-Oregon 22.



H. F. Harvey, 65 Olean St., Worcester, Mass.

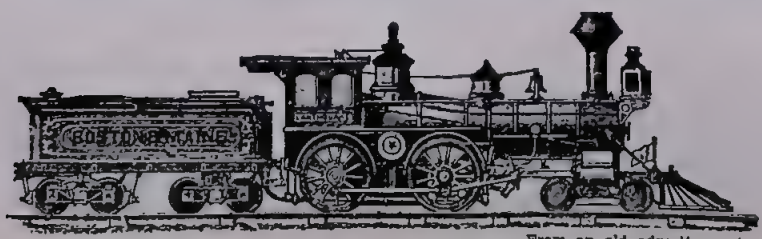
Bay State Locomotives

★ Their design affected by local conditions, some highly individual machines work in Massachusetts.

THE one-time land of the Pilgrim Fathers is a concentrated, busy manufacturing and mercantile area, a New England more comparable to Old England than any other part of our land. And its railroad problems are much the same as those of England: short runs over rough, choppy country.

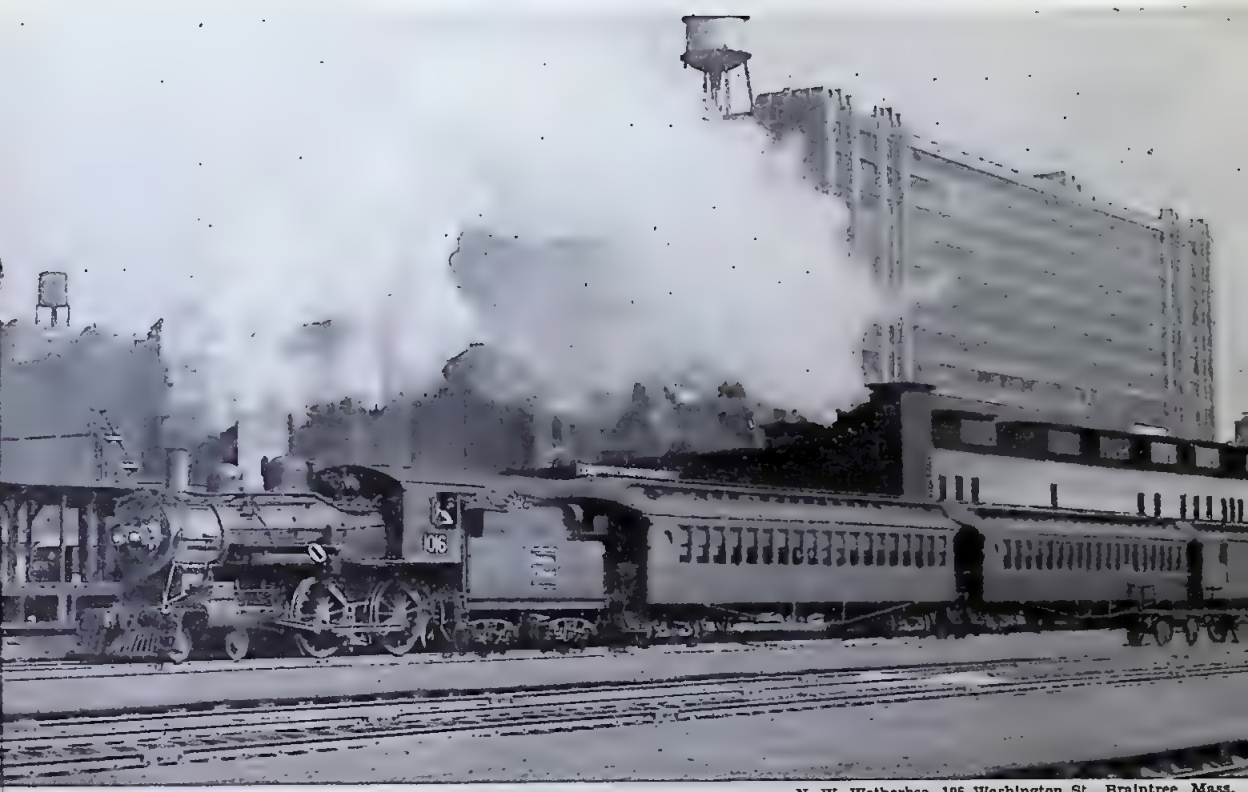
The steam locomotive, versatile machine that it is, has adapted itself with little outward change to these conditions. But the locomotives which run in the Bay State have their engineered differences and are as individualistic as they were in the days when New Haven engines had no running boards.

Compare, for instance, the Boston & Albany Hudson type with the J-1c Hudson type of the parent New York Central, built about the same time. The two designs have almost identical boilers, hence the same boiler horsepower. But the two engines use this horsepower differently. The New York Central machine, with 79" drivers, is designed for speed on the level stretches, while the B&A engine, with 75" drivers, is geared down to take the grades and accelerate after the curves of the route through the Berkshires [April 1942 TRAINS]. And while the Central job has a 12-wheel tender with capacity for 12,500 gallons of water and 24 tons of coal, the B&A, with shorter runs, provides an eight-wheel tender with tank for 10,000 gallons and bunker for 17 tons.



From an old advertisement.

Massachusetts has nearly 2000 miles of railroad, most of it Boston & Albany, Boston & Maine, and New Haven. Central Vermont cuts the state in half with its north-and-south line.



N. W. Wetherbee, 105 Washington St., Braintree, Mass.

Top, H. F. Harvey; bottom, H. W. Pontin, Railroad Photographs, 47 Royal St., Allston, Mass.

The photos.

At top of opposite page is one of the Boston & Albany's 2-8-4-type freight locomotives. This wheel arrangement was conceived in 1925 especially to meet the stiff operating conditions over the Berkshires, and the 2-8-4 has borne the type name Berkshire ever since. A direct descendant of the 2-8-2 type, the Berkshire has the advantage of greater grate area and hence the capacity to produce more steam. Thus, with the same size cylinders as the New York Central Mikados it succeeded, the Berkshire can turn in more ton-miles by running faster, attacking grades with more pep, and getting up to speed sooner after a slowdown or stop. The Berkshire, with its large grate area and small drivewheel diameter, typifies New England operating conditions, and may be compared with the 4-8-2 or Mohawk type of the New York Central, which has less grate area and large drivers, ample to cope with the Central's fast freight over more level road.

Above is one of the few remaining American-type locomotives of the Boston & Maine leaving North Station, Boston, with a suburban train. The large building in the background houses the offices of B&M, which has won a national reputation for "Yankee ingenuity" and aggressiveness. For its outstanding advertising and public relations work the road last year won a national award.

To the left are a typical Boston & Albany Pacific and one of the tremendous tank locomotives used for suburban service out of Boston.

Nos. 3718, 3703, Dana D. Goodwin, 350 Main St., Fitchburg, Mass.; 1105, American Locomotive Co.; bottom, Donald W. Furler, 65 Glen Ave., Glen Rock, N. J.

"Ye Salem Witch."

At first glance you'd think the 3718 a Hudson or perhaps a Mountain type, but count the wheels. She's an unusually heavy-looking Pacific, Boston & Maine Class P-4b, built by Lima. Ten of these engines and ten Mountain types were named by school children in a 1937 contest. One engine was named *Lily Pons*, and smart President French of the B&M further capitalized on this name by having Miss Pons christen the loco!

Ten B&M Pacifics are in the P-3 class, somewhat earlier in design and construction than the 1935- and 1937-built P-4's. Numbers are from 3700 to 3709. These engines were built by American Locomotive Company in 1923, and weigh almost 100,000 pounds less than their successors of little more than a decade later.

Another "Boston &" road is B&A, often confused with B&M. Its lines run to the south of B&M territory, and are mainly a Boston-to-Albany trunk, a vital part of the New York Central System. In 1918 the B&A was assigned 10 United States Railroad Administration standard light Santa Fe's, but these have since disappeared from the roster. Standardization of steam locomotives, excused as a war measure, was a dismal failure and many of the standard locomotives changed hands in the 1920's.

Like Boston & Albany, B&M has found the Berkshire type of locomotive quite adapted to its traffic and terrain, and works 25 of them in freight service. They are characterized by the Coffin feedwater heater mounted on the smokebox exterior, instead of inside.

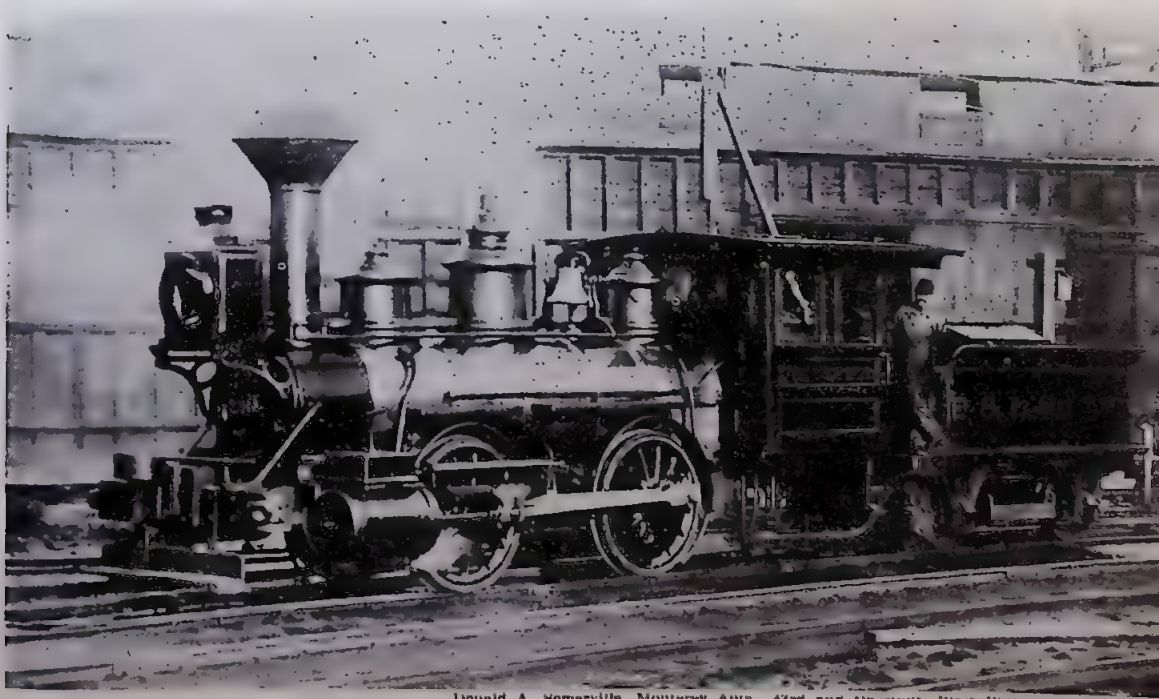
Volume 2.

The clothbound gold-stamped Volume 2 of TRAINS (November 1941, to October, 1942, inclusive) will soon be ready. Complete with index, postpaid--$4.00

Dana D. Goodwin.

The *East Wind* avoids Boston congestion.

An achievement in railroad cooperation is the *East Wind*, Summer-only coach train from Washington to Portland and Bangor, Me. It runs over the Pennsylvania Railroad, New Haven, Boston & Maine, and Maine Central. Yet with all these connections and changes of power the daytime running mate of the famous *State of Maine Express* (New York to Bangor) averages faster than 50 miles an hour. The canary yellow, with silver and black trim, cars are seen above behind B&M locomotive *East Wind* on the first run, June 21, 1940, in Worcester, where the train shortcuts west of Boston. Below is *Pennichuck*, No. 73, early locomotive of the Boston & Lowell, one of the B&M ancestors.



Donald A. Somerville, Monterey Apts., 43rd and Chestnut, West Philadelphia, Pa.

American-Swedish News Exchange, New York, N. Y.

Lapland Express

☆ World's northernmost electric railway taps rich source of iron ore far north of Polar Circle.

By Niell James.

I CAME upon the world's farthest-north modern electrified railroad at a point about half way between Paris and the North Pole, while vagabonding about Arctic Scandinavia. Far within the Arctic Circle it stretches across the frozen *fjelds* for some 300 miles, like a black thread upon the white landscape, to connect the port of Lulea on the Gulf of Bothnia with the strategic port of Narvik on the Atlantic seaboard of Norway, 125 miles north of the Polar Circle. The railway serves a sparsely settled land which lies blanketed with snow for nine months of the year, when the temperature drops to 59 degrees below zero. For two long, dark months during the Winter, the sun does not rise above the horizon. Summers are nightless: From mid-May until the end of July the sun remains always in view. It is a land upon which nothing can thrive save the Laplanders and their herds of reindeer. Yet the Lapland railway is perhaps the richest revenue-producing line of its length in the world.

Whence comes the rich flow of golden revenue?

Mr. Holmquist, an official of the railway living at Kiruna, an arctic mining town 100 miles north of the Polar Circle, supplied the answer to my question. It is iron ore.

The romance of Lapland's modern electric railway, the first railroad to be electrified in Sweden, is an account of the development of a mountain of iron and the building of a model polar mining town.

The ore deposit, discovered by nomad Laplanders while tending their herds of reindeer, became known to the outside world in 1736. Almost 40 years before the American Revolution, a royal commission was dispatched by the Swedish government to inspect the deposit. It was repeatedly explored, but the natural obstacles, such as the bitter cold, the presence of marshlands, broad rivers, mountains, and the remoteness from civilization, were so great that the idea of exploiting the deposit was discouraged. King Charles XIV and King Oscar I successively owned the mines in Lapland. Oscar finally sold it to the Swedish and Norwegian speculators in 1860 and they in turn sold it to the Gallivare Company, Ltd. But the world's richest surface ore deposit proved to be completely inaccessible.

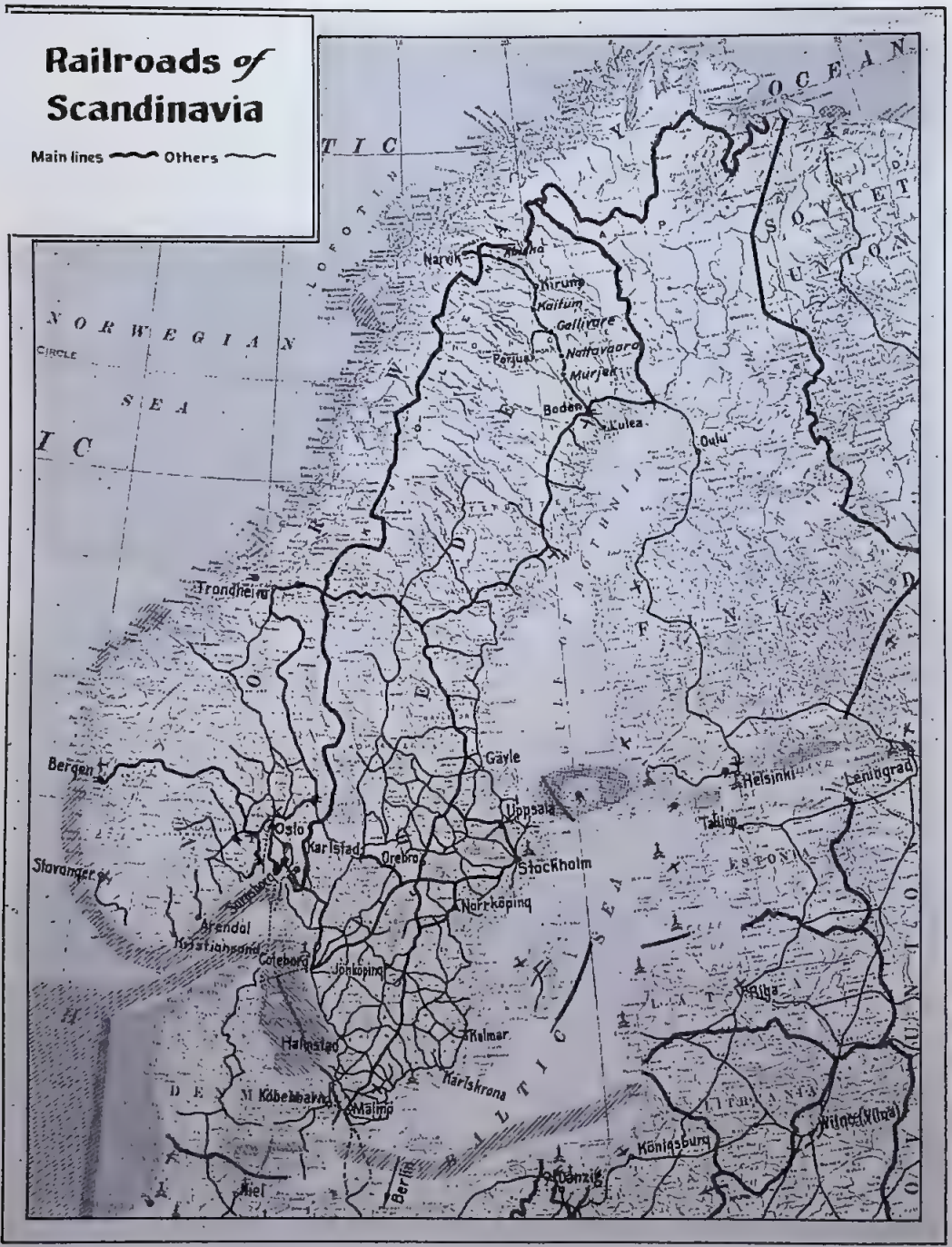
At first an effort was made to transport the ore to the sea by means of native local transportation, employing Laplanders and reindeer. The ore was loaded into reindeer-drawn *pulkkas* (boat-like sleds used by Laplanders), each of which had a capacity of 200 pounds and a reindeer speed of 20 miles per day. The effort was about as fruitful as trying to empty the ocean with a teaspoon, and the plan was abandoned.

But a mountain of iron ore worth untold millions right in a nation's back yard is a tantalizing phenomenon. Sweden next tried to connect the network of broad Lapland rivers by means of canals, to float the ore to the gulf. This excellent scheme failed for

Narvik is the Duluth of Europe.

The shipping facilities of Narvik (below) were targets in the Battle of Norway in 1940. Here iron ore is transferred from train to ship. Sixty ore trains a day roll between Kiruna and Narvik. The photo on the opposite page shows one of these at Bjorkliden, Sweden, near Abisko. Freezing weather is experienced nine months out of the year, as Narvik lies 135 miles north of the Polar Circle.

American-Swedish News Exchange.



One inch equals 170 miles.

Base map copyright by Rand McNally & Co., Chicago.

Sweden has the longest electrified railroad in the world.

For 1252 miles the line from Tralleborg (beginning of dotted lines south of Malmo on map) to the Norwegian border is one continuous stretch of electrified railroad, a portion of the Swedish State Railways. Next longest electric line is that of the Milwaukee Road in the United States, 656 miles in two sections. Sweden has the largest railroad mileage per capita in all of Europe; about 3700 of the 10,000 miles are government-owned. Because of the flow of iron ore to Narvik, the freight revenue of the State Railways exceeds that of all the other railroads combined. Shaded areas on map denote mine fields in 1940.

Swedish State Railways.

Tunnels in Lapland are cut through solid rock.

It was terrain such as this that made the Gallivare-Kiruna-Riksgransen section of the Swedish State Railways so difficult to build. By use of numerous tunnels and cuts such as these, the maximum grade was held to 1.7 per cent. Notice the bracket type of catenary construction. Power comes from Porjus Falls on the Stora Lulealv River on the east side of the mountains.

the simple reason that the water remained frozen in the canals and rivers for nine months of the year.

"My kingdom for a railway!" the sovereign may well have exclaimed.

An optimistic English company actually got a concession to build a railroad to tap the world's largest iron ore deposit. In the face of the arctic wilderness and natural obstacles, even the bulldog tenacity of the British failed, and in 1869 the company declared itself bankrupt.

A new enterprise, Gallivare Company, Ltd., with mostly English shareholders, tackled the job. Working in sub-zero climate, struggling against blizzards, traversing broad rivers and bottomless marshlands, man battled the elements and won, and by 1901 a standard-gauge railway was completed between Lulea, ore port on the Gulf of Bothnia, and Gallivare. The more difficult part of the railway was yet to be built, from Gallivare to Kiruna to Riksgransen on the Swedish-Norwegian frontier. It traversed a picturesque if desolate country, mountains, lakes, watersheds, dense forests and roaring rivers. The rails cross the *top* of the Norwegian mountain backbone, which here is far more jagged than in the south owing to channels made by melting snow as the water rushes down the great watershed. The highest grade on the Swedish railways is on the Lapland line, where it runs as high as 1 meter in 60 meters' length (approximately 1.7 per cent). Much tunneling through solid rock had to be done, and elaborate defenses were constructed as protection against snow slides.

At last the line was completed from Gallivare over the mountains to Narvik on the Atlantic, and the first ore train made the trip between Kiruna and Narvik on November 15, 1902. No sooner was the railway completed than the Swedish government found excuse to take over that part in Sweden because

the railway company did not "live up to specifications of the concession."

The 24½ miles of railroad on the western side of the mountains between Riksgransen and Narvik forms part of the Norwegian State Railways. Because of the greater steepness of the western slope of the range, this section was the more difficult to construct. The problem was to obtain a foothold for the grades and then to secure the foothold against the heavy impact of descending avalanches. Much of the line is protected by high snow screens or fences so close to the mountain wall as to form a tunnel when covered with snow.

The presence of vast waterpower, coupled with the absence of coal, encouraged the electrification of railways in Sweden. This work was begun first on the Lapland line in 1915 and was completed in 1923. Thus the Arctic has the distinction of having the first electric railway in Scandinavia. The water power which furnishes the "white coal" to operate the Lapland railway (and the iron mine) is derived from a mile-wide dam at Porjus Falls on the Stora Lulealv River. The hydroelectric power station is one of the largest in Sweden. The immense 41-foot-high dam, designed especially to resist the heavy pressure of masses of ice floating in the swift river during the Winter season, regulates the flow of the water which is conveyed through a tunnel to the power house. As a protection against climatic conditions, a room was blasted out of solid rock 165 feet below the ground level for the installation of machinery. Water enters the turbines from a vertical shaft. At present the station at Porjus is equipped for 82,500 horsepower developed by six turbo-generator sets, but when completed it will have a capacity of 140,000 horsepower. The greater portion of the current from Porjus is used by the railway.

Electrification was a complete and unqualified success despite the severe climatic conditions. Sweden, unlike Great Britain, has adopted alternating current, single-phase, 16⅔-cycle system. Experience has shown it is advantageous for the Railway Administration to buy from the general power system rather than construct its own power stations and transmission lines. The bulk of power required by the State Railways is supplied by the Board of Waterfalls on terms which seem to be satisfactory to both parties. The arrangement adopted is that the Railway Administration buys three-phase energy, usually at 6000 volts, and converts this energy at its own substations to single-phase low frequency.

Electrification of this line is so satisfactory both economically and as regards to comfort, convenience and speeding-up of service that complete electrification of all important lines in Sweden is only a matter of time. The line from Trolleborg, at the extreme south of Sweden, to Riksgransen, on the Norwegian border, is the longest continuous electrified railroad in the world, 1252 miles.

DEVELOPMENT of railroads in Sweden began in 1850, and today the country possesses a highly efficient network of standard-gauge (1.435-meter) railways, the total length amounting to about 10,000 English miles. Of this, about 3700 English miles belongs to the state, the balance being privately owned. However, the total freight revenue of the state-owned railways exceeds that of all other railways. In proportion to population, Sweden has the highest railroad mileage of any European country. Swedish State Railway rails have a weight of 27 to 43 kilos per meter. Lighter rails run between 10 and 12 meters in length, while the heavier are from 12 to 18 meters, the maximum length for Sweden. In other countries the custom is to use longer and longer rails.

Efficient train-ferry service, inaugurated in 1909, connects Sweden with Germany and Denmark and the European continent. Through cars and sleepers from Narvik via Stockholm roll aboard the train ferry at Tralleborg on the southern tip of Sweden, and four hours later roll ashore and continue over the German State Railways to Berlin. These train ferries, with a tonnage of 4500 and a speed of 17½ knots, have every convenience and comfort for passengers, including dining and other saloons on the upper deck, cabins, baths, wireless. Considerable freight traffic is carried on this train-ferry line, which runs twice daily. Trucks and cars from several countries in Europe are regularly trans-shipped at Tralleborg. It is possible for Swedish rolling stock to traverse central Europe and continue on to England via the Zeebrugge-Harwich train ferry.

A trainload of iron *could* be shipped direct

Swedish cars.

At top is a second-class day coach, comparable to an American day coach. At right is the inviting interior of a modern buffet car. The three women in the lower photo are sharing a compartment on a third-class sleeper. Quite a climb to the uppermost berth! Second-class compartments have two berths; first-class travelers sleep in complete privacy.

from the iron mine at Kiruna in Lapland, down the trunk line the length of Sweden to the port of Tralleborg, shunted aboard the train ferry, later rolled ashore at Sassnitz, and taken direct to smelting centers of the reich—a mere day-and-a-half travel between mine in Lapland and smelter in Germany. However, since water transport is cheaper, the ore actually goes by train to one of two ore ports and via ship to Germany.

COMPLETION of the 300-mile stretch of rail line (formerly the terminus of the Swedish trunk line) across the Scandinavian peninsula in the far north from Narvik to the border and Lulea served to connect two worlds. The new railway connects Stockholm in the South (via Boden) with Narvik in the North. Trains carry first-class dining cars, buffet cars done in modern decor with curved ceiling and broad "view" windows

Top, Swedish State Railways; others, Swedish Travel Information Bureau, New York, N. Y.

flanked by pastel drapes, sleepers and de luxe compartments. It is just 40 hours by express between two worlds—the sophisticated capital city in the South and the pioneer arctic ore port of Narvik in the North.

I traveled up and down the Lapland railroad many times, but I shall never forget my first trip. After spending the Winter living with the nomad Laplanders, sleeping in tents on the snow, I arrived by reindeer from the north and boarded the *Lapland Express* in Kiruna. In any other town in the world the sight of a passenger clad in reindeer fur, fur moccasins and fur mittens stuffed with hay would have halted traffic. In Kiruna no notice was taken of my bizarre garb. Swedish railway guards and trainmen, very handsome in their dark, natty uniforms adorned with gold insignia, topped by tall gray persian-lamb cossack caps, are accustomed to Lapp passengers clad in skins or blue woolen tunics trimmed with the colors of the Northern Lights. Quite naturally they mistook me for a native Laplander. When I spoke in English to the tall blond Swedish conductor who looked like Nelson Eddy, he couldn't have been more surprised if I had tweaked his nose.

The uniformed porter with cheeks like red apples eyed my modest luggage and put me aboard a third-class carriage. It was clean, spacious and comfortable. In halting Swedish smothered by a southern accent, I made him understand that I wished to be transferred, whereupon we descended to the platform and he opened the door of the next coach, which was fitted out precisely as an American day coach, with seats upholstered in blue. This was Class 2. Finally, I removed my fur mittens, fished around in the depths of the inner pocket of my fur parka, and drew forth a first-class ticket. It was the porter's turn to be surprised; my card called for a compartment complete with hot and cold running water. The plush seats were adorned with hand-embroidered white linen antimacassars. A broad plate-glass mirror extended the width of one wall. In Kiruna the temperature was flirting with 20 below zero, but the train compartment was warm and cozy.

Owing to the elongated form of Sweden, distances to be traversed, especially in Lapland, are considerable from a European point of view. Rolling stock of both state and private railways is of a high quality and maintained in good condition. First-, second- and third-class sleeping cars are attached to all night trains on main lines. Certain day trains carry saloon cars which are at the disposal of travelers without extra charge. Day trains do not as a rule include first-class cars, but accommodations in Swedish second equals what is offered in first on the best European and American railroads.

Neill James, 1175 Chapel St., New Haven, Conn.

Tornetrask station.

This sky-scraping station, halfway between Kiruna and the Norwegian frontier, is big enough to house the entire citizenry of the hamlet. Most of the space is used to house substation transformers.

The long distances have brought sleeping-car service to a high pitch of perfection. In first-class sleeping cars the traveler is always entitled to a separate compartment for himself. This includes hot and cold running water and a private toilet. Two persons share a second-class compartment, while three people may have to share a third-class compartment.

Fares on the Swedish railways are designed to delight the heart of the traveler. For instance, from Riksgransen on the northern frontier to Gothenburg in the extreme South, a distance of 1964 kilometers (1215⅝ miles), first-class fare is 65 kroner, second, 29.25 kroner, and third is only 19.50 kroner (less than $5; 1 kroner equals about 25 cents). Cars attached to the through trains are all of the double-bogie corridor type, with pleasing and in some instances sumptuous interior fittings. All principal day trains carry dining cars, where for 2 kroner the passenger may enjoy a delicious meal from *smorgas* of a dozen varieties through soup to nuts and demi-tasse. Not even French cuisine equals Swedish.

Traveling "first" has its comforts, but for one interested in the everyday people of a country, it is far too exclusive. Leaving my luxurious compartment and my luggage, I

T. Dahll, Kiruna, Sweden.

The station at Kiruna.

One hundred miles north of the Polar Circle stands this gateway to the city of Kiruna. The train dispatcher occupies an apartment above the station. Kiosk at left sells foreign publications.

Neill James.

Porjus-Gallivare train.

Bus-like rail coaches connect Gallivare and Porjus. Gallivare, on the main line, is about midway between Lulea, on the Gulf of Bothnia, and the Norwegian frontier. Notice the baggage trailer on this branch-line train.

went back to "third," where the seats were upholstered with straw. I sat among a colorful group of passengers. A pretty Lapp woman clad in blue woolens and reindeer-skin *paesk* carried her baby strapped in a birch *kumse* (cradle carved out of birch log) lined with rabbit's fur, swung over her shoulder by a red woven band, papoose fashion. She sat reading a Swedish magazine. There were a number of Laplanders on board, and several Swedish youths in ankle-length plus-fours. A special car transported skiis free. Knapsacks were stowed in a small compartment at the end of the coach. These passengers were going to Abisko, northernmost tourist station in the world, on the Swedish-Norwegian frontier.

In crossing Lapland on the *Express,* I was impressed by the imposing modern brick railway stations along the route. I photographed the Tornetrask station, a five-story red brick structure resembling a fine theatre, surrounded by a scant dozen unpainted dwellings of wood and logs, half way between Kiruna and the Norwegian frontier. The station itself is big enough to comfortably house the entire population of the hamlet, and looks strangely out of keeping with the austere arctic landscape. Such "skyscraper" railroad stations in the sparsely settled Arctic represent an engineer's mistake. When erected, it was the opinion of the experts that transformers should be sheltered from the rigors of sub-zero temperatures. Therefore the station was built over the transformer. Too late it was discovered that the transformers could be left to the mercy of the weather. The Swedish government, once proud of these imposing structures, now heartily wishes the Lapland railway stations were less conspicuous. They form perfect targets for bombs.

When the arctic traveler crosses the Polar Circle, regardless of linguistic deficiencies, he cannot fail to know that he has performed this remarkable feat. A large sign in four languages proclaims: POLAR-KREIS - POLCIRKELN - ARCTIC CIRCLE - CIRCELE POLAIRE. Paradoxically, Polcirkeln, the railway station 100 miles south of Kiruna, is not, as its name implies, on the Polar Circle. It was there, however, until geographers shifted the Circle a kilometer to the south.

I traveled on the short-line electric railway which connects Porjus with Gallivare and operates a bus type of passenger and baggage car. A herd of reindeer pawing in the snow in search of lichen, frightened by the train, dashed onto the tracks and raced madly ahead, forcing the engineer to slow down.

"Does your train ever crash headlong into a herd of reindeer?" I asked.

"A great many are killed," he replied. "The railway must pay. It is a nuisance."

"Why don't you fence-in the tracks?"

"The law prohibits it. A fence would cut Lapland in twain and prevent the free movement of the nomads and their herds. Besides that," he laughed, "nothing short of a 15-foot fence would be of any use. A reindeer is a high jumper!"

A reindeer is worth the equivalent of $10 ($20 for a draft animal). The owner merely has to present the ears to collect.

After spending several weeks in the model mining town of Kiruna, 100 miles north of the Polar Circle, with a population of 14,000, my childish idea that people living in

the land of the aurora borealis slept six months during the dark of Winter was shattered. Workshops and roundhouses are located in Kiruna, where most of the railway employees in the Arctic make their homes. They live in modern electrically heated apartments and houses, enjoy first-class schools for their children, public libraries, churches, and up-to-date shops. Employees carry accident insurance, contribute to a sick relief fund, and under union contract each is entitled to two weeks' vacation after a year's employment. The finest club for the benefit of railway employees on vacation in Scandinavia belongs to these employees. It is situated at Abisko and is complete with nine-hole golf course. Trainmen have nomad youths in colorful costumes as caddies when they play on this northernmost golf course in the world.

Because of the extremely cold climate, railway employees receive extra compensation for duty in Lapland. Many of them feel sheepish about accepting the money because they actually prefer to work in the Arctic. Like everyone in Sweden, they enjoy the benefits of socialized medicine. A railway employee's wife may go to a modern hospital for confinement and the grand total cost, which includes room, nurse, doctor, and food, for a period of 10 days will amount to just $2.50. The rate is 1 kroner per day.

Miners toil in eight-hour shifts blasting away a mountain of iron. Large electrically operated cranes load the ore into hopper cars of 35-ton capacity. A 1900-ton trainload of ore destined for either of the two ore ports consists of 40 cars, drawn by a 3400-horsepower electric locomotive weighing 127 tons. All of the electric locomotives in use on Swedish railways were built by the Swedish General Electric Company, generally known as "Asea." This company also builds them for export.

The engineer on this line doesn't have to worry about cattle. There are none. Occasionally his engine does scoop up a reindeer. Instead of a cow catcher, the locomotive carries a small scoop plow. Snow is the greatest enemy. Even a 40-below-zero temperature neither slows nor stops operations of the railway. Huge rotary plows, operating somewhat like an electric fan in a roomful of feathers, precede each train. Ice scrapers clean the tracks. During the bitter cold of the past Winter, accompanied by violent snowstorms which isolated communities, disrupted rail traffic, closed schools, hampered distribution of food supplies, and froze the ferry service to Denmark despite aid of icebreakers, the electric railway in the far north continued to operate on schedule. Germany must have her iron—or else.

En route to Narvik, at a point where the grade begins to increase, a second engine is attached to the ore train. Thus 254 tons of electric engines, with the drawing power of 6800 horses, haul a train of 40 carloads of ore over the mountains, through tunnels and snow sheds, using regenerative braking on the downgrade on the western side to keep the train from running away. Ore trains on the upgrade en route to Narvik have the right of way over Kiruna-bound trains. Passenger expresses politely sidetrack in order to allow sea-bound ore trains to pass.

Sixty ore trains daily thunder over the frozen plains of Lapland through tunnels and snow sheds to the thriving arctic port of Narvik. Here the ore is loaded on ships. Once they were bound for England, the U. S. A. and Germany. Since the start of the war, Germany has had a corner on Swedish iron ore. During the brief Summer when the Gulf of Bothnia is free of ice, full use is made of Lulea as a shipping port.

The Lapland iron deposit produces the richest ore in Europe. It is from 66 to 71 per cent pure iron and is more valuable than a gold mine to the Swedish government. The rich income of the Lapland railway is derived from hauling this ore to the ports; before the start of the war 10 million tons of ore was hauled annually. The deposit at Kiruna contains enough known ore to keep the mine operating on a 24-hour basis for at least 300 years.

On January 1, 1942, the Kirunavaara-Luossavaara Mining Company, which operates the Lapland iron mines as joint owner with the Swedish government, announced that the gross revenue from ore shipped in 1941 went down by 18 million kroner to 57,500,000 kroner—a reduction of about 24 per cent. Great destruction was wrought on the railway terminus at Narvik during the battles of Narvik in 1940, the damage being estimated at 10,600,000 kroner. Negotiations with the Nazis for compensation are now under way.

Swedish Traffic Association, Stockholm.

The Lapland Railway is dependent upon the mine for its very existence. Although its income is a secret, an official admitted that it exceeded the entire revenue derived from the remaining network of railways throughout Sweden. And this same line is assured of capacity freight-hauling for the next three centuries!

Land of snow, ice, and iron ore.

Winters on the Lapland railway are replete with scenes such as the one at the top. Ice scrapers (center) are used to assure good electrical contact with the rails. The lower photo shows ore trains and dock facilities at Narvik. These were damaged to the extent of 10,600,000 kroner ($2,650,000) during the battles of Narvik.

Center, T. Dahll; bottom, American-Swedish News Exchange.

"All Aboard"

Train-route quiz.

From what originating city, what station, and over what railroad do trains leave for each of the following railroad routes, identified by principal stations? Give yourself two points each for knowing the correct originating cities, four points each for the correct stations, and four points each for the correct railroads. Perfect score is 100; 78 points is for timetable fans, and even the consistent traveler will do well to top 60. How do you stack up? The answers are at bottom of page. No peeking!

1. Fort Wayne, Crestline, Youngstown, Pittsburgh, Harrisburg, Philadelphia, and New York. (We'll spot you 10 points for a starter and as an example. The answer is: Chicago, Union Station, Pennsylvania Railroad.)

2. Toronto, Hamilton, London, Sarnia, Port Huron, Flint, Lansing, and Chicago.

3. Poughkeepsie, Albany, Schenectady, Utica, Syracuse, Rochester, Buffalo, Cleveland, Toledo, and Chicago.

4. Galesburg, Fort Madison, Kansas City, Newton, La Junta, Albuquerque, Williams, Barstow, San Bernardino, and Los Angeles.

5. Kirkwood, Gray Summit, Jefferson City, Sedalia, Pleasant Hill, and Kansas City.

6. Gulfport, Mobile, Flomaton, Montgomery, Birmingham, Decatur, Nashville, Louisville, and Cincinnati.

7. Butler, DuBois, Mount Jewett, East Salamanca, Buffalo, or Rochester.

8. Mojave, Bakersfield, Tulare, Fresno, Modesto, Tracy, Oakland, and San Francisco.

9. Newark, Philadelphia, Wilmington, Baltimore, and Washington.

10. Colorado Springs, Pueblo, Salida, Glenwood Springs, Grand Junction, Salt Lake City, and Ogden.

Soo Line's *Winnipegger* arriving in Winnipeg.

The Canadian Pacific reaches its arm down into the United States via its subsidiary, the Minneapolis, St. Paul & Sault Ste. Marie Railway, whose bright red coaches are much like CP's own. Here the Soo Line's crack overnight *Winnipegger* from the Twin Cities arrives in Winnipeg on the advertised, 9 a. m.

S. Styles, 502 Sherburn St., Winnipeg, Canada.

Answers.

1. Chicago, Union Station, Pennsylvania Railroad.
2. Montreal, Bonaventure or Windsor Station, Canadian National.
3. New York, Grand Central Station, New York Central.
4. Chicago, Dearborn Station, Santa Fe.
5. St. Louis, Union Station, Wabash.
6. New Orleans, L&N Station, Louisville & Nashville.
7. Pittsburgh, B&O Station, Baltimore & Ohio.
8. Los Angeles, Union Station, Southern Pacific.
9. New York, Pennsylvania Station, Pennsylvania Railroad.
10. Denver, Union Station, Denver & Rio Grande Western.

"Keep 'Em Rollin'.. or Else!"

says grandpappy engine 2414 to a 1942 Santa Fe Freight Diesel

"Back in '98, in the Spanish-American War," reminisces little Old-Timer 2414, "20 cars was an average-length freight train. By World War I, we'd upped our Santa Fe freights to an average 35.9 cars. Not bad railroadin', that."

"Not bad is right," answers the big new freight Diesel, "but not good enough for World War II. Now we've stretched 'em out another 41%, to 50.9 cars, and those cars are bigger, loaded heavier, and rolling farther and faster."

"Good work, son," says Old-Timer. "Yours is the BIG war job. Keep 'em rollin'—or else!"

KEEP 'EM ROLLIN'—OR ELSE

★ No nation that does not possess efficient mass transportation can hope to win a modern war. In America that mass transportation job is squarely up to her railroads. *If they fail, we lose.*

Neither battle gallantry nor industrial wizardry alone will turn the tide. To meet this tremendous responsibility, *we ask for every possible consideration in the allocation of materials for vitally essential repairs, maintenance and new equipment.*

DAILY THE LOAD INCREASES

To date, the railroads have met 100% the staggering demands born of this global war. Many have helped make that record possible—the War Department, the Office of Defense Transportation, civilian shippers and travelers everywhere.

In the first six months of 1942, *with 25% fewer locomotives,* the Santa Fe moved 94% *more* freight ton-miles and 27% *more* military and civilian passenger miles than in the first six months of 1918, in World War I.

Daily the load increases. No man knows what the peak will be. We *do* know there is a limit to the performance that can be squeezed out of existing equipment.

Santa Fe

SERVING THE SOUTHWEST FOR 70 YEARS

SANTA FE SYSTEM LINES

Linn H. Westcott.

Angel's Flight

★ Los Angeles cable-car line does profitable business in nickles and pennies; it hauls passengers one block.

A RAILROAD only 405 feet long, but with a thousand trains a day—that's the Angel's Flight Railway of Los Angeles, operating cable cars between Hill Street and Olive Street. If you miss a "train," you needn't worry, for there will be another one along in a minute.

The builder of the road, Col. J. W. Eddy, must have stood at the bottom of the line when he named it "Angel's Flight," even though the upper station also bears this name instead of the more fitting "Devil's Glide," or what have you. Built in 1900, the road was sold in 1912 to the Angel's Flight Railway Company with R. M. Moore as president. Today it is under the same management, and its latest available report (1929) shows it paid dividends of 12 per cent on its $25,000 capitalization. Assets of the company in 1929 totaled $166,324.

The railway is nothing more than a cable-car line on a 33-degree incline. Equipment consists of two 32-passenger cars attached to a cable operated by an electric motor. The track consists of three rails at the top and bottom of the incline, with a four-rail passing section in the middle. The cars are permanently attached to the cable, so that as one car goes up the other comes down, meeting at the halfway mark.

The railway operates from 6 a. m. until 12:20 a. m., and in the 18 hours 20 minutes the two cars make a thousand trips. The four conductors, who work on three shifts a day, have orders not to keep anyone waiting more than one minute.

A railfan round trip costs 5 cents, but regular commuters use books good for 50 rides each, at a cost of 50 cents. At these reasonable rates the company had gross earnings of $24,457 in 1929. The city threatened to terminate the franchise in 1935, when it planned to tear out the hill, but a temporary franchise was granted to continue operation when 1200 users of the railway filed a written protest with the city fathers.

Pearly gates.

This is the upper station on Los Angeles' unique Angel's Flight Railway, at Olive and Third streets. Passengers enter here for the downward ride to Hill Street. The trees between the station and the building to the left are in a park occupying the Third Street right of way. The street itself now tunnels under this park. Los Angeles once had several similar railways, but these have disappeared in recent years. Angel's Flight was shown on a map on page 15 of the June issue of TRAINS.

Passing siding.

Like counterbalances, the cars themselves reduce the load on the motor. Notice how the center rail splits without flangeways.

Linn H. Westcott.

One of the legends of the road is that the builder, Col. Eddy, used to give passes on it to other railroad companies, which responded in kind. Their executives could ride up and down Angel's Flight free, every time they were in Los Angeles. But Col. Eddy could travel considerably farther without expense.

Need for the road was felt when the city found it impossible to pave this one-block section of Third Street, due to the steep grade. The street right of way was turned into a city park. But pedestrians found it inconvenient to make a long detour to get to the top of the hill, and Col. Eddy's venture was a success from the start. The city has since tunneled under the hill to accommodate vehicular traffic, but pedestrians still find the cable cars the most convenient way to reach their destination.

Inclined planes have long been used in various parts of the country. The first railroads in the United States were of this nature; they were privately owned and used for freight transportation in the Alleghenies. A picture of one of these, now abandoned, is on page 15 of the October TRAINS.

Nanson-Barham, 6022 Hartford St., St. Louis, Mo.

New 4-8-4 for Frisco faster freight.

This is one of the first of 15 Baldwin-built coal-burning 4-8-4's, ordered last year, to be delivered to the St. Louis-San Francisco Railway, better known as the Frisco Lines. The new locos are arriving at St. Louis at a rate of about one a week; the first was delivered September 6. No. 4503 has 250 pounds pressure, 28" x 31" cylinders working on 74" drivers, and delivers 69,800 pounds tractive force. Loaded weight is 842,000 pounds. The tender is of one-piece welded construction and has a capacity of 18,000 gallons of water and 24 tons of coal. The new freight hogs have brand-new heralds on the tender: a big red circle with three flying F's to proclaim "Frisco Faster Freight."

Below, 4503 breaks in with a trainload of freight. This photo was taken at Southeastern Junction, near St. Louis, on her first trip.

Nanson-Barham.

TEAMWORK FOR VICTORY

YOU know how sometimes a team of five men, or nine men, or eleven men, gets inspired—how everything clicks and it can beat any team in the world?

Well, the same thing has happened to a team of more than 700 separate railroads, large and small.

For twenty years these railroads have been training for any transportation job that might come along—laying heavier rail, speeding up trains, getting more work out of every freight car. They've been rehearsing "new plays" which make the most of teamwork—not only teamwork among railroads, but also teamwork among railroads and the shippers and travelers who use them. And now, when the test has come, this railroad team is playing the kind of ball that coaches dream about.

Since long before Pearl Harbor, the railroads have taken on one "impossible" assignment after another as shortages of ships and rubber have placed abnormal loads upon them. And they are keeping all this added traffic moving with the smooth efficiency of an experienced and thoroughly trained team.

Railroads and shippers alike have a right to be proud of the job they have done. It's a great example of unity—of what American industry can accomplish by teamwork for victory.

ASSOCIATION OF
AMERICAN RAILROADS
WASHINGTON, D. C.

Letters

★ Interesting sidelights on railroads as readers observe them.

Quiz Picture Identified.

THE unidentified photo on page 33 of September TRAINS, showing two locomotives, is of the Cincinnati, Bluffton & Chicago Railroad at Petroleum or Pennville, Ind.; I do not recall which. The posters on the shed advertised a show held at Bluffton, Ind.

The CB&C ran from Portland to Huntington, where it connected with the Erie. It did a fairly good business, but its managers and owners succumbed to the high prices paid for scrap rail during World War I and sold out.

R. W. Carlson.

522 W. Washington Blvd., Fort Wayne, Ind.

[To Mr. Carlson is awarded the promised Certificate of Unusual Powers of Perception.—*Ed.*]

SP Rips Up Old Line.

THE Southern Pacific is tearing up its old line through the Mission District of San Francisco—nearly two miles of it, including six bridges, one a double-span truss bridge over Dolores Street. This was the original line into San Francisco, built, I think, in 1866. Some of it is being kept for industrial service—up to 22nd and Folsome and several miles from South San Francisco or San Bruno to about Ingleside.

Hazen A. Stanley.

582 21st St., Oakland, Calif.

Early Train Ride.

YOU may be interested in the following account of a rail trip from Chicago to Detroit in 1847. It is taken from a rather rare book, the *Adventures in Mexico and the Rocky Mountains* (published in 1848) by George F. Ruxton, a British army officer. On his way east after an exciting trip through the Rockies, he wrote:

"Leaving Chicago, I crossed the lake to Kalamazoo, whence I 'railed' across the Michigan peninsula to Detroit, the chief city of the state of Michigan. This railroad was a very primitive affair, with but one line of rails, which, in very many places, were entirely divested of the iron, and in these spots the passengers were requested to 'assist' the locomotive over the 'bad places.' However, after killing several hogs and cows, we arrived safe enough at Detroit."

S. G. Morley.

2635 Etna St., Berkeley, Calif.

Odds and Ends.

IN THE article "By Rail Across Lake Michigan" by Harold M. Mayer [September TRAINS], he might have added that the Lake Michigan car ferries travel more miles per year than any other vessels on earth. Each car ferry spends most of its time on the water and is seldom in port.

Russell J. Piltz.

c/o Kimberly-Clark Corp.,
8 S. Michigan Ave., Chicago, Ill.

IN CONNECTION with your article on Hoosac Tunnel, way back in the February issue, you might have added an interesting fact: Hoosac Tunnel is one of the few sections, if not the only section, where trains run without markers. From approximately November to April, markers on trains going through the tunnel are taken down and placed on the platform. Reason: Too many markers were knocked off by icicles hanging down in the tunnel.

George Beater.

1100 E. Main St., Millville, N. J.

He Doesn't Like "Tin Cans."

THE silly-looking streamlined tin cans are supposed to be three times stronger than standard equipment. That statement, as far as I'm concerned, goes in one ear and out the other. Streamlining of railroad rolling stock is just so much applesauce, and a great pain in the neck for most railroad men, especially car inspectors.

Sumpter Valley 2-6-6-2.

Built by Baldwin in 1926 for the Uintah Railway, this articulated narrow-gauge engine is one of two twins now serving the Sumpter Valley.

About the most comfortable and relaxing streamlined trains are the blue and gray ones of the B&O. This is due, no doubt, to the greater weight and well designed six-wheel trucks. For smooth riding and solid comfort, give me the six-wheel truck any time.

I enjoyed the *Lady* and *Lord Baltimore* article in the September issue very much. I rode behind the skittish *Lady* soon after she came out, with the new lightweight tin cans behind her. That ride cured me of the featherweight freaks.

Since then the lightweight boys have had a tough time trying to sell the B&O their queer-looking product. Even the rich and powerful Pennsy shies away from this type of equipment. No doubt, Pennsy engineers long ago found out that their strong, well built coaches and standard diners can be remodeled into modern streamlined cars at a fraction of the cost of new tin cans. The results are cars of greater stability and a much neater appearance..

How about an early article on modernized trains that are making good?

Lawrence J. Callanan.
313 W. 92nd St., New York, N. Y.

Sumpter Valley Still Runs.

IN YOUR issue of September, you state on page 39, in referring to the Sumpter Valley, ". . . a narrow-gauge California road abandoned a few years ago." The SV is still doing fine, as a freight-only road, and is in Oregon, not California. The two 2-8-2's which were sold to the White Pass & Yukon were replaced on the SV by a fine pair of 2-6-6-2's [see cut], formerly Uintah 50 and 51.

B. H. Ward.
1401 10th Ave., San Francisco, Calif.

Statement of ownership.

Statement of the Ownership, Management, Circulation, etc., required by the Acts of Congress of Aug. 24, 1912, and Mar. 3, 1933.

Of TRAINS, published monthly at Milwaukee, Wis., for Oct. 1, 1942.

State of Wisconsin, County of Milwaukee, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared A. C. Kalmbach, who, having been duly sworn according to law, deposes and says that he is the publisher and editor of TRAINS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Aug. 24, 1912, as amended by the Act of Mar. 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, A. C. Kalmbach, 4821 W. Woodlawn Ct., Milwaukee, Wis.; Editor, A. C. Kalmbach, 4821 W. Woodlawn Ct., Milwaukee, Wis.; Managing Editor, W. V. Anderson, R. 3, Box 361, Waukesha, Wis.; Business Manager, Henry H. Kirtland, 403 Lake St., Pewaukee, Wis.

2. That the owner is: Kalmbach Publishing Co., 1568 W. Pierce St., Milwaukee, Wis.; William B. Calhoun, 2505 Brady St., Davenport, Ia.; Jane E. Chamberlain, St. Margaret's School, Waterbury, Conn.; Drayton Cochran, 157 E. 63rd St., New York, N. Y.; W. D. Collett, 8038 Drexel Ave., Chicago, Ill.; Robert J. Fakler, 2874 S. Delaware Ave., Milwaukee, Wis.; Arthur E. Hughes, 605 Murdoch Rd., Baltimore, Md.; A. C. Kalmbach, 4821 W. Woodlawn Ct., Milwaukee, Wis.; B. G. Kalmbach, 4821 W. Woodlawn Ct., Milwaukee, Wis.; Mae C. Kalmbach, 1140 N. 37th St., Milwaukee, Wis.; W. H. Nichols, 48 Woerd Ave., Waltham, Mass.; Carl A. Sorling, 1645 Ruth Pl., Springfield, Ill.; Francis S. Spon, Box 423, Brightwaters, N. Y.; W. Edmunds Spon, Box 423, Brightwaters, N. Y.; Frank Taylor, R. 11, Box 640, West Allis, Wis.; M. D. Thornburgh, 105 S. Mulberry St., Chillicothe, O.; Linn H. Westcott, 1362 N. 39th St., Milwaukee, Wis.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

A. C. KALMBACH, Publisher.

Sworn to and subscribed before me this 26th day of September, 1942.

A. C. MALUEG.
Notary Public, Milwaukee County, Wis.
[SEAL.] (My commission expires May 23, 1943.)

Albert Farrow, 138 10th St., S., Auburn, Wash.

The Month

★ Government requisitions D&RGW segments for Alaskan railroad.

★ The United States Government has requisitioned three segments of the narrow-gauge lines of the Denver & Rio Grande Western in western Colorado. Rolling stock and rail so obtained is to be used on the Alaska-Canadian railroad now under construction. The O. D. T., after conferences with officials of the D&RGW, proposes to take up and move to Alaska the lines between Ouray and Ridgway, Durango and Silverton, and Cedar Creek and Gunnison. Much of the rolling stock is also scheduled for the same destination. A protest of the action has been entered at Washington by Senator Eugene D. Millikin and Governor Ralph L. Carr of Colorado.

★ High tribute was recently paid to the late William B. Kirkland, General Superintendent of Transportation of the Southern Pacific Company. In recognition of Mr. Kirkland's untiring effort and wise counsel in solving army transportation problems since the outbreak of the war, the following memorandum was issued by Brigadier General Gilbreath in San Francisco: "In memory of him and his services, the Army Railroad at North Point in the City of San Francisco is hereby officially named, and will be designated as 'Kirkland Yard'." Army facilities in the past have been named only for deceased army men.

★ Centralized traffic control comes again to the fore with a recent report on the 60.7 miles of single-track main line so equipped between Richmond, Ind., and Norwood Heights, O., on the Pennsylvania Railroad. Before C. T. C. was installed on that route in September, 1941, traffic ranged from 12 to 15 trains daily. Because of the war the average jumped to 10 passenger trains and 16 freight trains for a total of 26 trains, or an increase of 73 per cent over the former maximum a year ago. Timetable, train-order and manual-block operating time per freight train has been bettered nearly 30 minutes. Additional tonnage can now be handled because passing tracks have been lengthened and new power-operated switches eliminate train stops formerly caused by the operation of hand-throw stands at passing-track switches.

★ Congratulations to the 1600 employees of Boston & Maine for making it the first railroad in the country of more than 300 employees to reach the goal of contributing 10 per cent of their entire payroll for the regular purchase of war bonds. In a telegram to Edward S. French, president of the B&M, Henry Morgenthau Jr., secretary of the treasury, stated: "Yours is the first railroad of more than 300 employees to make this outstanding contribution to our war effort and I am sure the almost 1½ million officers and employees in the railroad industry will follow the fine example you have set. Please accept my deep appreciation to all concerned for their cooperation."

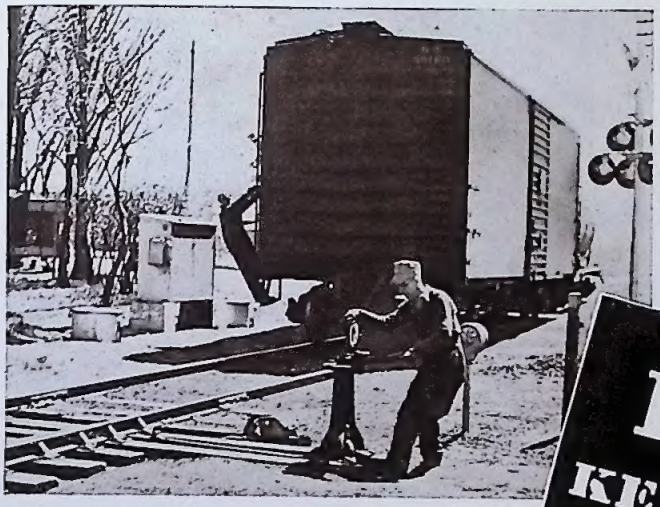
★ Aiding the war effort by releasing former equipment for more important military needs, the Rock Island-Southern Pacific Lines have put into service new streamlined standard sleeping cars on the *Golden State Limited* between Chicago, St. Louis, and Los Angeles. An innovation is the introduction of numbers on the cars, rather than designating each car by name as in the past. Ordered many months before Pearl Harbor, the cars have just been completed. Other new equipment in service on the *Golden State Limited* are three stainless-steel dining cars, each equipped with 48 seats. They are being operated on the *Limited* between Chicago and Tucumcari. The *Arizona Limited*, popular Winter train between Chicago and southern Arizona points, will not be operated by the RIL-SPS during the 1942-43 season. Conserving of equipment and manpower for essential war traffic is the reason.

★ The Delaware & Northern, 41-mile railroad operating between Arkville and East Branch in New York, is destined for the scrap pile. Samuel R. Rosoff, subway builder who purchased the road in 1928 for $70,000 and then spent $150,000 to rebuild it, for the simple reason that he wanted to be a railroad man, announced that demolition will start with I. C. C. permission to cease operations. More than 7000 tons of scrap metal will be reclaimed from rails, bridges, engines, passenger and freight cars, and signals. Mr. Rosoff estimates that this will be enough to produce 280,000 50-caliber machine guns or 400 tanks.

★ Authorization from the W. P. B. has been received by the Norfolk & Western for construction of five Class A locomotives, 2-6-6-4 type. They will be built in the company's shops, provided the necessary materials can be secured. It is hoped that all five locomotives will be finished by March, 1943.

★ The final allocation of 18,000 cars authorized by the W. P. B. as necessary to complete the 1942 car-building program has been effected. On September 1, 13,310 cars in this allotment had not been delivered.

★ The Union Pacific has received 20 more single-expansion articulated steam locomotives of the 4-6-6-4 type to bring the number to 60 now in operation on that railroad. Otto Jabelmann, vice-president of the UP, designed the locomotive in cooperation with the builders, the American Locomotive Company. After delivery of the first 15 of this type to the UP in the Summer of 1936, performance records were studied with growing interest by designers throughout the country. Six other railroads needing high-speed freight locomotives for mountain duty have ordered a total of 90 similiar engines from American.



The railroads are helping to win the war by doing the impossible on the strategic transportation front. They are moving 65 times as much oil to the East as in peace, twice as much freight, more passengers than ever before, as many as 71 trains a day on two-way single track, and all without car shortage or delay. No wonder the railroads don't welcome company now!

BUSY
KEEP AWAY

Do your railroading the armchair way!

WHILE the railroads are too busy for fan trips or informal roundhouse visitations, try books . . . the easy way to armchair travel and the quick way to familiarity with all the railroads of the 48 states. Try the three Lucius Beebe albums, for instance—*High Iron, Highliners,* and *Trains in Transition*—each a monumental collection of excellent photographs, well reproduced, with stirring text and captions. Try the new *This Fascinating Railroad Business,* by Robert S. Henry, probably the most readable book about the inside workings of the railroads.

Home and fireside can hardly substitute for smoke and steam and the smell of hot cylinder oil, but when a fellow hasn't much choice the right books can offer a wide background of locomotive lore that sort of takes the edge off wartime restrictions. So how about Edward Hungerford's celebrated *Locomotives on Parade,* with its hundreds of intimate tales about the great and less-great locomotives of past and present? Or Ed Alexander's *Iron Horses,* with its 96 lithos of nineteenth century locomotives, representative of the story of locomotive development?

Use the coupon to order now, or suggest to wife or girl friend that now is the time to do Christmas shopping early.

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First of the Lucius Beebe railroad picture books. Outstanding text as well. 225 8" x 11" pages, postpaid, $5.

Highliners
By Lucius Beebe. Second of the Beebe series, this is more purely a photo album than the others, and the broad page measure is more suited to satisfactory display of the usual railroad scenes. 103 11" x 8" photos with facing captions, postpaid, $5.

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By E. P. Alexander. A collection of 96 lithographs representative of the history of 19th century locomotives, with appropriate descriptive text. 239 8½" x 11" pages, postpaid, $5.

Locomotives on Parade
This is the book for the man who likes locomotive lore. No one but Edward Hungerford, who has fraternized with locomotives and their people all his life, could tell as many or as interesting intimate stories about the engines of our railroads. 230 6½" x 9" pages, postpaid, $2.50.

TRAINS, Book Dept.
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Enclosed is $_____. Please send:

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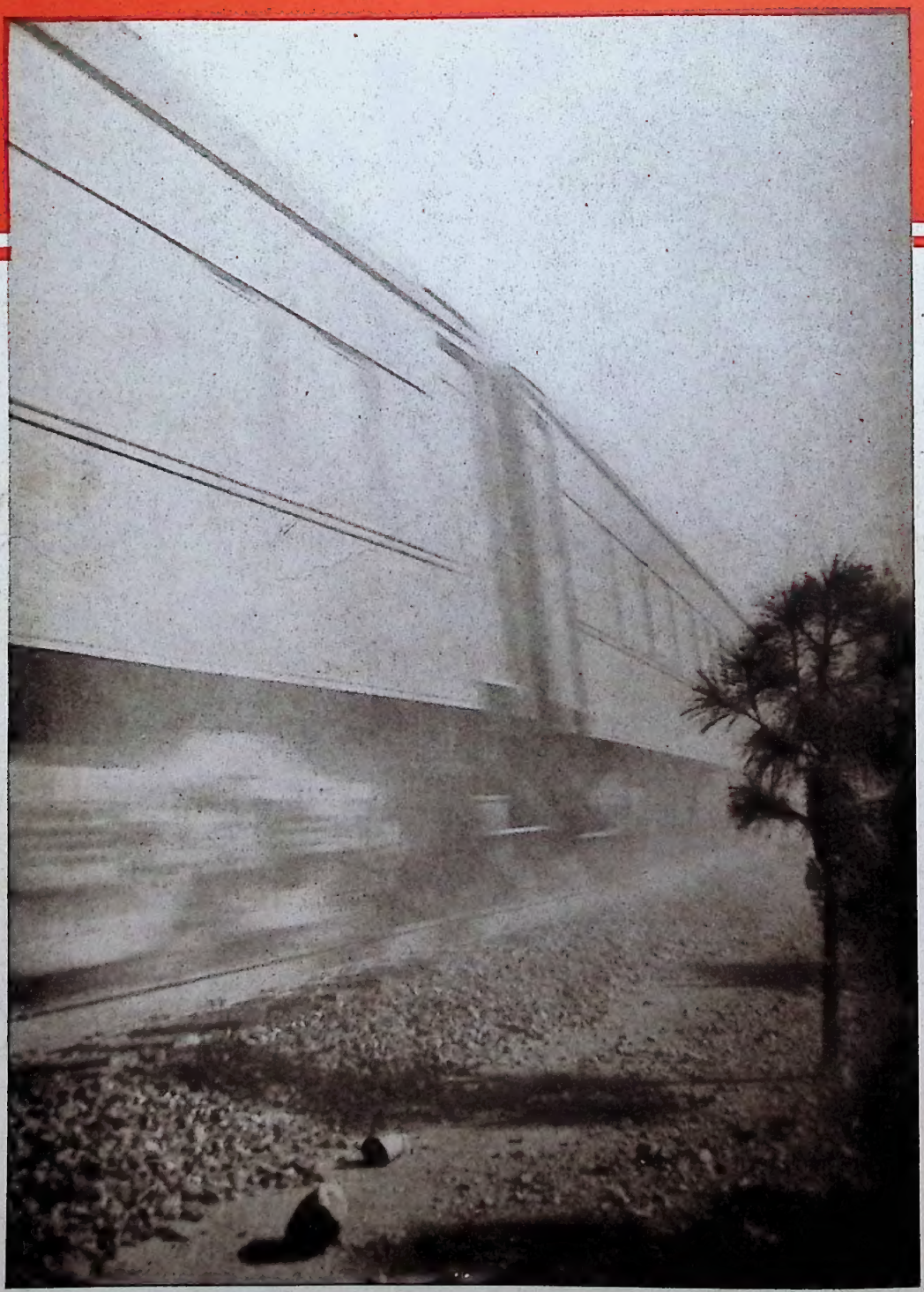
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